Stepping into old age

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A dynamic perspective on age identity change in the transition from midlife to older adulthood

Bibiana María Armenta Gutiérrez

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To Sofia

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Chapter 1

General Introduction

The number of older adults in society, and consequently in the workforce, is increasing at the highest rate in the history of humanity. This trend is not only unprecedented, it is also enduring and pervasive—a global phenomenon (United Nations, 2001). Globally, the ratio of people aged 60 years and older increased from 9.2% in 1990 to 12.5% in 2015 and in 2030 it is expected to reach 16.5% with a share of more than 25% in Europe and in North America (United Nations, 2013, 2015). An aging population represents challenges for society, for organizations and for older adults themselves: For society because a reduced pool of younger workers is asked to support an increased number of older adults who are living longer and therefore, demand more health care and aging services than previous cohorts. For organizations, the challenge lies in the need to implement new practices to integrate, motivate, and retain older adults in the workforce. For older adults aging is a difficult transition period—as will be further argued in this dissertation—that requires a shifting of identities from middle-aged to older adults (Kulik, Ryan, Harper, & George, 2014).

One important challenge that aging individuals, organizations, and society at large have to meet is the prevalence of negative views of aging (Levy & Banaji, 2002; North & Fiske, 2012). Negative views of aging in turn translate into negative stereotypes (cognitive schemas), prejudice (negative attitudes) and discrimination (negative behavior) towards older adults based merely on their (perceived) age (Levy, 2003; Richeson & Shelton, 2006). This is specially the case in Western societies where a negative image of older adults regarding their working capabilities, physical appearance, and mental and physical competences is prevalent (Clarke & Griffin, 2008; Ng & Feldman, 2012; Stewart, Chipperfield, Perry, & Weiner, 2012b). Although positive stereotypes of older adults also exist, they tend to portrait them as warm but incompetent (Cuddy & Fiske, 2002). Perceived warmth and incompetence elicit pity, which can induce feelings of contempt and denial of opportunities (Cuddy & Fiske, 2002; Richeson & Shelton, 2006). Importantly, negative views of age and aging are also endorsed by older adults themselves, resulting in negative cognitive and physical consequences such as diminished memory performance, functional health and even survival (Levy, 2003; Levy, Slade, & Kasl, 2002; Levy, Slade, Kunkel, & Kasl, 2002). Negative views, attitudes and behavior towards older individuals permeate the workplace, the medical system, and the media, affecting older adults' social and economical opportunities, self-esteem and health outcomes (North & Fiske, 2012). All in all, adults who transition from midlife into older age undergo a transition in status: from high to low.

Because becoming an older adult is a transition with unique characteristics (i.e., is potentially made by everyone, is flexible and is progressive), they can be considered a special type of low status group. This complicates the study of older adults' responses to bias since most research on intergroup bias has focused on groups that are rather stable (e.g., gender, race; cf. Garstka, Schmitt, Branscombe, & Hummert, 2004). Discrimination research based on these groups frequently assumes that individuals embrace their group identities (even when stigmatized) because this entails well-being advantages (Branscombe, Schmitt, & Harvey, 1999; Jetten, Branscombe, Schmitt, & Spears, 2001; Schmitt, Branscombe, Kobrynowicz, & Owen, 2002). However, while for members of traditional groups seeing oneself as such is mostly clear and

inescapable, in the case of older adults the boundaries are flexible: When someone is an older adult is not well-defined and partly a subjective assessment. This ambiguity relates to an important concept put forward by Social Identity Theory (SIT)—the most influential theory in the field of intergroup relations—: the concept of *permeability of group boundaries* (Tajfel & Turner, 1979). According to SIT people who perceive the boundaries of their group as permeable are less likely to identify with their ingroup than those who perceive them as impermeable (Ellemers, Van Knippenberg, De Vries, & Wilke, 1988). This in turn has differential cognitive, behavioral, and emotional consequences (Ellemers, Van Knippenberg, & Wilke, 1990; Johnson, Terry, & Louis, 2005; Wright, Taylor, & Moghaddam, 1990). Although a central concept in the literature, permeability so far lacked a formal conceptualization and a validated measure. It is therefore an important contribution of the present dissertation to provide an integrated conceptualization and the validation of a scale that allows the measurement of permeability perceptions on older adults and other social groups (see Chapter 4).

In the case of adults transitioning into old age whose boundaries are permeable and who generally do not like to self-categorize as elderly (O'Brien & Hummert, 2006; Rothermund & Brandtstädter, 2003), one wonders: *When (if at all) do people start to identify with the group of 'older adults', and is it adaptive to do so?* As mentioned above, the literature on intergroup relations suggests that older adults would be motivated to identify with their ingroup because a higher ingroup identification partially alleviates the negative consequences of belonging to a low-status group (Garstka et al., 2004; C. Haslam et al., 2010). Contrary to the intergroup relations literature the aging literature mostly proposes that older people would rather dissociate from their age group when perceiving negative cues of aging (Weiss & Freund, 2012; Weiss & Lang, 2011). One way to distance oneself from the negative cues of aging and agism is to feel younger than one's actual age, a phenomenon that has been called *subjective age bias* (SAB). SAB might be an adaptive response employed by older adults' to protect their self-image from the perceived negative consequences of entering an advanced chronological age (Weiss & Lang, 2011). In support of this hypothesis, SAB was found to be associated with negative views about aging and with traits that help maintaining self-enhancement and positive illusions about oneself, such as optimism and self-efficacy (Teuscher, 2009). Furthermore, SAB is consistently associated with well-being indicators such as life satisfaction and positive affect (Teuscher, 2009; Westerhof & Barrett, 2005). Throughout this dissertation I propose that identification with the group of older adults (GI) *and* SAB are both viable responses to perceived negative cues of aging and agism for adults transitioning from midlife into older age. However, whilst both SAB and GI are viable responses to age discrimination, the present dissertation proposes they are quite distinct: SAB is a more individual response (the self is being contrasted away from the core group-defining characteristic) whilst GI is a more collective response (the self becomes interchangeable with the group). Furthermore, because older adults in this transition period do not have a consolidated identity as older adults, SAB and age GI may not be stable but rather fluctuate (e.g. across days).

The primary question this dissertation addresses is: *How do perceived cues of aging and agism affect older adults' identity responses, and what are the*

consequences of this for well-being? This overarching question is further divided into three questions, which are assessed in the empirical chapters of the present dissertation:

1) Do older adults modify their age GI and SAB in the face of age discrimination, and what are the consequences of this for well-being? (Chapter 2)
2) What is the role of daily age GI and SAB on negative age-related personal and social experiences, and what are the effects of this on people's well-being? (Chapter 3)
3) What is permeability, how can we measure it for the group of older adults and other social groups, and how does it affect GI and coping strategies? (Chapter 4)

The present dissertation takes thus a novel approach to the study of age identity change in the transition into older age by exploring two components of age identity, SAB and age GI, in a dynamic fashion. On the one hand, it assesses individual (through SAB) and collective (through age GI) identity responses to dealing with this transition when cues of aging and agism are perceived (Chapters 2 and 3). On the other hand, it assesses the dynamics of SAB and age GI by studying how they differ between people who vary in levels of perceived discrimination (Chapter 2), but also how they develop for a same person across days (Chapter 3). Furthermore, it compares the group of older adults with other low social status groups on their perceptions of how permeable they perceive their group boundaries to be, and studies the effects of permeability on GI and behavioral intentions (Chapter 4).

Following this approach, the present dissertation integrates and extends the aging and social psychological literatures in the study of older adults' age identity responses in important ways. First, it contributes to the *aging* literature in that it incorporates the collective type of responses (through age GI) with the more studied individual type of responses (such as SAB) to perceived cues of aging and agism. I argue that the study of collective type of responses—together with the individual type—is essential to understand how older adults respond to disadvantage because the group to which we belong constitutes an essential aspect of our self-identity (Brewer, 1991). Moreover, this dissertation further explores SAB as an adaptive response to negative feelings of age related changes and of age discrimination, extending the traditional view in the aging literature of subjective age as a subjective awareness of people's own aging (Diehl & Wahl, 2010). Particularly, the effects of a dynamic SAB on which Chapter 3 focuses, is an underexplored line of research whose relevance just begins to be recognized (Kotter-Grühn, Neupert, & Stephan, 2015). Finally, this dissertation provides empirical evidence showing that SAB and age GI are different constructs with potentially different well-being advantages and not synonyms as largely understood in the aging tradition (Barrett, 2003; Diehl & Wahl, 2010; Westerhof & Barrett, 2005). While the aging literature largely uses the terms SAB and age GI interchangeably when referring to *age identity* the present dissertation refers to them as two different *components* of age identity.

Second, the present dissertation contributes to the *social psychological* literature in that it explores individual and collective types of responses as relatively independent processes that, as such, could jointly contribute to enhancing people's well-being. Herewith, it challenges the traditional view that individual and collective types of responses are mutually exclusive (see also Becker, Barreto, Kahn, & de Oliveira Laux, 2015). Furthermore, the study of GI as a flexible construct that can fluctuate even daily in contexts where group membership is more permeable (such as during the transition from midlife to older age) provides a novel approach to the traditional view of GI as stable. This opens interesting avenues for future research which are discussed in Chapter 3. Finally, this dissertation provides a formal conceptualization and operationalization of permeability of group boundaries, which is a key construct in social psychological research. It further provides an application of the measure of permeability to different social groups including older adults.

A general model of the central elements studied, which serves as an overarching framework for this dissertation, is depicted in Figure 1.

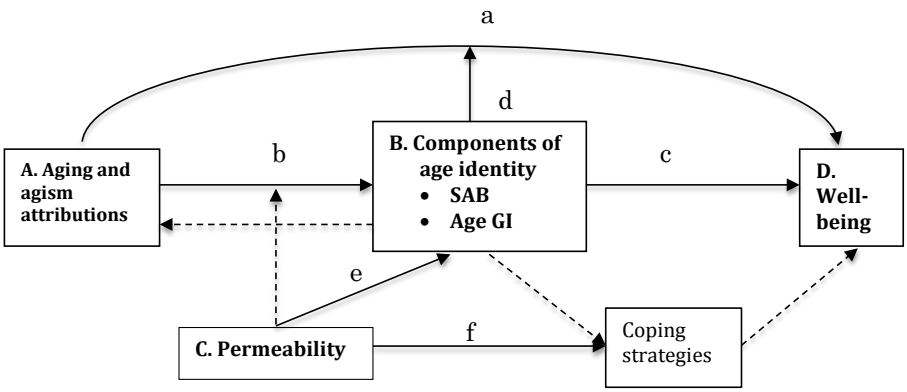

Figure 1. Interplay between aging and agism attributions and older adults' identity formation in predicting well-being. Dashed lines refer to relationships not directly tested in this dissertation.

In the following, I will elaborate in more detail on the different constructs and relationships that make up the proposed model and that constitute the foundations of the chapters to come.

A. Aging and agism attributions

Aging and agism attributions are here used as an umbrella term to refer to the negative experiences that older adults attribute to their own aging or to ageism. In particular, attributing negative personal events to aging (or cues of aging; e.g., perceived physical or cognitive decline), and negative social events to age discrimination (or cues of agism; e.g., unjust treatment) are the main predictors of the proposed model.

One important aspect of age attributions lies in their potential to affect well-being outcomes (Figure 1, path a). As evidenced by numerous studies, attributions to aging and agism can affect people's well-being in important ways.

For example, attributing illness to age is associated with poorer health and greater risk of mortality (Stewart et al., 2012b), while perceived discrimination has been shown to negatively affect self-esteem, cognition, behavior, mental and physical health, and willingness to live (Levy, 2003; Moor, Zimprich, Schmitt, & Kliegel, 2006; Pascoe & Smart Richman, 2009; Rodin & Langer, 1980). Moreover, attributions to discrimination, and concerns about being disadvantaged due to one's group membership have a negative impact on emotions, well-being and health (Mendes, Major, McCoy, & Blascovich, 2008; Pascoe & Smart Richman, 2009; Schmitt & Branscombe, 2002a). On the other hand and although not focused on age groups, research has shown that attributing discrimination to group membership can also have a protective effect when compared to attributions to personal failure (Crocker & Major, 1989; Major, Quinton, & Schmader, 2003). However, this is not the case when discrimination is perceived as pervasive (Branscombe et al., 1999; McCoy & Major, 2003; Stroebe, Dovidio, Barreto, Ellemers, & John, 2011).

Following the model in Figure 1 path b, this dissertation proposes that aging and agism attributions will bring about changes in age identity. Studies in this regard have been so far cross-sectional or focused on age stereotypes (Garstka et al., 2004; Weiss & Lang, 2011). Chapter 2 proposes and tests a novel hypothesis: that perceiving age discrimination affects both, how much people identify with the group of older adults, and how old they perceive themselves to be. Chapter 2 further tests the effects that changes in SAB and age GI have on the well-being of targets of age discrimination. This is further elaborated in the following sub-section.

B. Components of age identity

In this dissertation I use the term components of age identity to refer to SAB and age GI. I explain the nature of these two constructs and outline their importance below.

Subjective age bias (SAB)

Subjective age is an important construct in the aging literature to assess people's perceptions of their own age and aging (Kotter-Grühn et al., 2015). Subjective age *bias* refers to the gap between subjective age and chronological age. SAB is typically used as a measurement of how old a person feels because it accounts for the general increasing tendency to feel younger as chronological age advances (Montepare & Lachman, 1989). The large interest in this construct arises from findings showing that SAB is positively associated with numerous well-being indicators such as life satisfaction, positive affect, subjective health, self-efficacy, and self-esteem; and is negatively related to negative affect and mortality (Figure 1, path c; Teuscher, 2009; Uotinen, Rantanen, & Suutama, 2005; Westerhof & Barrett, 2005).

In line with the model in Figure 1, this dissertation studies whether SAB constitutes a response to perceived age discrimination, whether it is an adaptive response (Chapter 2), and whether its daily fluctuations have an impact on daily attributions of negative events to aging and agism, and on well-being (Chapter 3).

Age group identification (age GI)

GI is a central construct in the social psychology literature as people draw part of their individual identity from the groups they consider their own. GI has been robustly found to impact people's perceptions, emotions and behavior (Ellemers, Spears, & Doosje, 2002). Moreover, GI is suggested to have advantages for health and well-being as identifying with a group gives people a sense of meaning, purpose and belonging (Figure 1, path c; S. A. Haslam, Jetten, Postmes, & Haslam, 2009).

There is empirical evidence of a relation between discrimination and GI as depicted in Figure 1. For example, research shows that GI increases when manipulating perceived discrimination (Jetten et al., 2001). It is also possible that this relationship be bidirectional: research suggests that in some cases, GI can increase the likelihood that individuals attribute ambiguous events to discrimination (Major, Quinton, et al., 2003; Operario & Fiske, 2001). The latter path is not studied in this dissertation.

In the present dissertation we[1] assessed identification with the group of older adults and older workers, or age GI, to study whether it constitutes a response to age discrimination, whether it is an adaptive response (Chapter 2), whether it fluctuates daily, and whether its daily fluctuations have an impact on daily attributions of negative events to aging and agism, and on well-being (Chapter 3).

SAB and age GI as different constructs

Numerous studies in the aging literature propose that SAB and age GI are interchangeable constructs (Heckhausen & Krueger, 1993; Kaufman & Elder Jr., 2002; Levy, 2003; Logan et al., 1992; but see Weiss & Lang, 2009, 2011). After all, it seems plausible that the younger an older adult feels the less (s)he identifies with the group of older adults. In contrast, the Social Identity literature distinguishes individual from collective identities (Brewer, 1991; Turner, Oakes, Haslam, & McGarty, 1994). Individual identities refer to personal characteristics that define the person as distinctive from relevant others in a particular social context. Collective identities refer to personal characteristics that define the person in terms of their shared similarities with members of a given group (Tajfel, 1982; Turner et al., 1994). From this perspective, SAB can be seen to relate to an individual identity because it refers to a unique aspect of the individual, which is tied to personally felt changes. In contrast, age GI relates to a collective identity as it refers to feelings of connectedness and solidarity with other group members. For the specific case of age groups whose boundaries are flexible and blurry (i.e., the moment a person passes from middle-age to old-age is highly subjective and personal), these two types of identities may, I argue in this dissertation, be orthogonal. In this case an individual identity of feeling younger may be in contrast or in agreement with a collective identity of identifying with the group of older people. Indeed, it has been found that when facing stigma, older adults may respond by feeling younger (Weiss & Lang, 2011),

[1] I use the pronoun "we" when referring to the theorizing and general content of each empirical chapter, as each chapter constitutes a joint effort between the coauthors and myself.

but they can also respond by identifying with the group of older adults (Garstka et al., 2004). Yet to date studies have not considered these strategies conjointly nor have elucidated the potentially orthogonal relationship between SAB and age GI. We do so on Chapter 2.

The right-hand side of the model in Figure 1 refers to the proposed effects of SAB and age GI on well-being. SAB and age GI are here depicted as responses to attributions to aging and agism, which can in turn have direct effects on well-being (Figure 1, paths b and c). Specifically, Chapter 2 proposes that SAB and age GI can be two different responses to discrimination that could increase older adults' self-esteem and subjective health. Additionally, these responses can further trigger coping mechanisms, which can in turn be beneficial for well-being. In particular, because age GI refers to a collective identity it may enhance collective strategies, and because SAB refers to an individual identity it may trigger individual strategies. Support for the indirect benefits of GI on well-being has been found for the group of mentally ill, for whom GI triggered collective coping strategies (i.e., stigma-rejection, stereotype-rejection, provision of social support) which in turn increased people's self-esteem (Crabtree, Haslam, Postmes, & Haslam, 2010). Evidence of the indirect benefits of SAB on well-being is provided by studies that found that anti-aging practices are used by older people to increase their self-esteem (Clarke & Griffin, 2008). Whether different types of strategies (i.e., of collective and of individual nature) are uniquely or jointly associated with age GI and SAB are not part of this dissertation but I believe are interesting propositions for future research. These are further discussed on Chapter 5.

Finally, this dissertation proposes that SAB and age GI will moderate the relationship of aging and agism attributions with well-being (Figure 1, path d). Chapter 3 does so by taking the novel approach of studying SAB and age GI daily variations. Specifically, Chapter 3 tests the hypothesis that on days when older adults feel younger and identify less with the group of older workers they will attribute negative age-ambiguous events less to their age than on days when they feel older and identify more with the group of older workers. Importantly, adding to the novel proposition that SAB and age GI are different components of age identity, Chapter 3 tests the hypothesis that SAB and age GI will influence attributions of different types of events. Namely, SAB would influence attributions of those events that are personal in nature (e.g., forgetfulness) while age GI would influence attributions of those events that are social in nature and thereby potentially discriminatory (e.g., being excluded from meetings). Chapter 3 further tests whether age attributions by older workers in turn negatively affect two important predictors of job performance: affect and cognitive engagement.

C. Permeability of group boundaries

The concept of permeability of group boundaries was developed by SIT (Tajfel & Turner, 1979), and it was proposed as a determinant factor to understand reactions of members of groups with unequal status towards intergroup inequality (Tajfel, 1975). The concept is still highly relevant due to its empirical capacity to predict ingroup attitudes (e.g. GI) and intergroup behavior (e.g. individual versus collective coping strategies). Despite its importance, there

existed no agreement in the literature on its conceptualization. In this dissertation we conceptualize permeability as *the perceived objective or subjective possibility of changing group membership, and/or of changing hierarchical status* (Chapter 4). This conceptualization of permeability is an important contribution to the literature that so far has understood and measured permeability in two different ways: permeability as the possibility of changing *group membership* (e.g., a person changing from one sport team to another)—typically manipulated in experiments—, and the possibility of changing *hierarchical status* (e.g., a person acquiring a higher social status)—typically measured in field studies. The above definition constitutes thus a rather complete approach to study permeability because it integrates two types of permeability that have been assessed separately in the existing literature.

Relation to components of age identity

As the model in Figure 1 shows, permeability is expected to moderate the relationship between aging and agism attributions and SAB and age GI. Researchers in the area of intergroup relations have proposed and found this moderational role for GI. That is, when perceiving discrimination and when perceiving the boundaries of the group to be permeable rather than impermeable, people identify less strongly with the group (Ellemers et al., 1988, 1990; Tajfel & Turner, 1979). Furthermore, when the boundaries of the group are perceived as permeable people will tend to engage in individual-type responses such as mobilizing to the outgroup (Ellemers et al., 1990; Wright et al., 1990). Consistent with my proposition that SAB relates to an individual type of response, I argue that perceiving permeability as high has the potential to induce a higher SAB. Although not directly tested in this dissertation, results of Chapter 2 seem to indirectly support the moderating role of permeability as depicted in Figure 1: For the group of adults transitioning from middle-age into older age—a rather permeable group—identification was not a consistent response to age discrimination while SAB—a more individualistic response—was.

Furthermore, permeability is known to *directly* predict GI (Figure 1, path e; Ellemers et al., 1988; Mummendey, Kessler, Klink, & Mielke, 1999), as well as collective and individual strategies as explained below (Figure 1, path f; Ellemers et al., 1990; Hersby et al., 2009; Lalonde & Silverman, 1994).

Relation to coping strategies

SIT distinguishes two major approaches to intergroup inequality: *individual strategies,* where members of disadvantaged groups seek to improve their situation individually (this often means leaving the low status group and joining the high status group), and *collective strategies,* where members of the low status group seek to improve the situation of the group as a whole such as engaging in collective protests (Tajfel, 1974, 1975). The way in which individual members of disadvantaged groups react to inequality depends on different social conditions. According to SIT, one key social condition that would cause members of a disadvantaged group to respond to inequality as a group member rather than as an individual is when they perceive the boundaries between groups to be impermeable. That is, if the boundaries of the group are perceived as

impermeable and individual advancement is not possible, collective strategies would be favored. On the contrary, if the boundaries between groups seem permeable and thus upward mobility is possible, individual strategies will be preferred (Tajfel, 1975; Tajfel & Turner, 1979).

Empirically, permeability has been found to have both a direct (Figure 1, path f) and an indirect (through GI; Figure 1, path e) role on predicting intergroup behavior. Specifically, perceived impermeability has been found to explain collective action (Lalonde & Silverman, 1994; Mummendey, Kessler, et al., 1999; Mummendey, Klink, Mielke, Wenzel, & Blanz, 1999), social creativity strategies (Jackson, Sullivan, Harnish, & Hodge, 1996; Mummendey, Kessler, et al., 1999), greater derogation of ingroup criticism (Dechesne, Janssen, & Knippenberg, 2000), and to discourage individual mobility (Ellemers et al., 1990; Wright et al., 1990). Based on the developed operationalization of permeability in Chapter 4, this chapter further shows that both types of permeability (i.e., membership and status) have the potential to affect the endorsement of collective and individual strategies in the direction found by previous research for various social groups: older adults, women, obese, lower educated and ethnic minorities.

D. Well-being

There has been increased interest in the social psychological literature in how group memberships affect well-being (e.g., Jetten, Haslam, & Haslam, 2012). Although there is now robust evidence that social identities have an impact upon psychological well-being, less consistent is the valence of these outcomes: Social identities are often associated with positive well-being consequences, but when the identities carry a stigma or other attributes that affect the individual negatively they may also yield negative consequences (cf. Crabtree et al., 2010; Foster, 2000, 2014; Pascoe & Smart Richman, 2009; Schmitt, Branscombe, Postmes, & Garcia, 2014).

In this dissertation we aimed at further exploring the impact of age identity components on well-being by studying various mechanisms as shown in Figure 1. In particular, we focus on four well-being outcomes, which we deemed most relevant for the model proposed in the respective chapter. Thereby, Chapter 2 studies the effects of age discrimination and age identity on self-esteem and subjective health, while Chapter 4 focuses on the impact of age attributions of negative work events and of age identity on negative affect and cognitive engagement. I outline the relevance of each well-being outcome studied in this dissertation below.

Self-esteem is studied as an outcome of discrimination in Chapter 2 as it has consistently been a focal well-being outcome in the discrimination literature (Crabtree et al., 2010; Crocker & Major, 1989; Schmitt et al., 2014). It has been found that self-esteem fluctuates in response to discrimination and that it is malleable particularly at older ages (Branscombe et al., 1999; Robins & Trzesniewski, 2005). Self-esteem has been found to increase steadily across adulthood but to sharply decrease towards old age (Robins & Trzesniewski, 2005). So far it is unclear why this late-life drop in self-esteem occurs but an increased prevalence of age discrimination may be one underlying factor. Indeed, self-esteem has been shown to be affected at older ages through an internalization of the negative evaluation of the group by the dominant culture

and through a reduction of feelings of self-control produced by ageist self-fulfilling prophecies (Rodin & Langer, 1980). We based our predictions that SAB and age GI can enhance self-esteem for older adults (Figure 1, path c) on the findings that SAB can be a self-enhancing strategy that correlates with self esteem (Barak & Stern, 1986; Teuscher, 2009), while GI has been found to enhance self-esteem when perceiving discrimination (Branscombe et al., 1999; Garstka et al., 2004; Jetten et al., 2001; Schmitt et al., 2002).

Subjective health is a highly relevant well-being component in older ages and main constituent of successful aging (Freund & Riediger, 2003). Subjective health, or self-perceived overall health (Liang, 1986), has been found to correlate with disability, functional ability, depression, and cognitive functioning, and to be an independent predictor of mortality (Helmer, Barberger-Gateau, Letenneur, & Dartigues, 1999; Idler & Benyamini, 1997). Importantly, perceptions of subjective health seem to be malleable with evidence showing that they can be affected by aging self-stereotypes (Moor et al., 2006). Furthermore, the gap between subjective health and objective medical evaluations increases as people get older (Baltes & Smith, 2003). Surprisingly, this concept has received little empirical attention in the discrimination literature. In Chapter 2, we study two routes that may buffer targets' subjective health and self-esteem from experiences of discrimination: an individual route through SAB, and a collective route through age GI.

In Chapter 3 we assess the well-being effects of attributing negative events to age in work settings. In this chapter we focus on *negative affect* and on *cognitive engagement* as well-being outcomes since they are highly relevant in the work context. On the one hand, affect has been shown to influence key organizational outcomes such as decision-making, creativity, and teamwork (Barsade & Gibson, 2007). In the aging context, affect is one of the main indicators used by gerontologists to measure subjective well-being and is an important indicator of successful aging (Freund & Riediger, 2003). On the other hand, cognitive engagement—defined as the capacity of being fully psychologically present at the cognitive level (Kahn, 1990)—is a key predictor of job performance and job satisfaction. Moreover, cognitive engagement is related to task performance and organizational citizenship behavior over and above other commonly used predictors, such as job involvement and intrinsic motivation (Rich, Lepine, & Crawford, 2010a). Importantly, negative events such as daily stressors or perceived discrimination are shown to elicit negative emotions that could have long term consequences (Charles, Piazza, Mogle, Sliwinski, & Almeida, 2013; Kuba & Scheibe, 2016a; M. Wang et al., 2013), and to diminish cognitive engagement (Beal, Weiss, Barros, & MacDermid, 2005; Inzlicht, McKay, & Aronson, 2006; Klein & Boals, 2001; Schmader & Johns, 2003). Particularly, in older adults daily stress variability predicts impairment of daily cognitive performance (Sliwinski, Smyth, Hofer, & Stawski, 2006a).

Overview of the chapters to come

As previously outlined, each empirical chapter focuses on different parts of the model shown in Figure 1. The three empirical chapters thus constitute inter-related subprojects that try to answer different research questions in an

integrative manner. The theorizing, hypotheses, design, and accompanying discussion of the studies are based on theory and research in the areas of aging, intergroup relations, and organizational psychology. I note however that each chapter was written individually as to make up for a journal article and therefore some ideas and arguments may overlap. The chapters make use of different methodologies whose strengths and weaknesses are briefly discussed below.

In *Chapter 2*, we assess the questions: *Do older adults modify their age GI and SAB in the face of age discrimination, and what are the consequences of this for well-being?* This chapter focuses on examining how experiences of age discrimination affect the two studied components of age identity: SAB and age GI. The proposition here is that older adults who transition from midlife into older age can make use of different identity responses when facing age discrimination, and that these responses in turn can affect their well-being. To test these hypotheses Chapter 2 makes use of three experimental studies where we randomly assign participants to either a discrimination or a control condition in a job application scenario. Furthermore, we conducted a meta-analysis, which incorporates the cumulative data of the three studies. Although the use of scenarios has the inherent disadvantage of low ecological validity, the methods used offer several important advantages: Experimental studies allow us to draw causal conclusions and with the use of an internal meta-analysis we increase the number of observations (488 in total), the statistical power, and improve the estimates of the effect sizes of the associations (Lakens & Etz, 2017).

Chapter 3 deals with the questions: *What is the role of daily age GI and SAB on negative age-related personal and social experiences, and what are the effects of this on people's well-being?* In answering these questions Chapter 3 takes a unique approach in the area of discrimination and uses a daily diary design to study the dynamic nature of the two age identity components. Particularly, it focuses on the differential role that daily fluctuations of SAB and age GI play on daily age attributions, affect and cognitive engagement of older workers. Although causality cannot be claimed for diary studies, their use complements traditional cross-sectional studies and laboratory experiments by offering several benefits: They have high external validity as they approach the studied phenomena in their natural settings (Beal, 2015; Bolger & Laurenceau, 2013). With few observations it is possible to already infer how change develops in time for a prototypical person (Bolger & Laurenceau, 2013, p. 2). The study in Chapter 3 follows 169 older workers for the course of 10 days, which should allow for a good representation of change for a typical person in the studied population. Moreover, diary studies focus on how people change over time rather than on how people differ from one another which diminishes the problems of omitted and confounding variables (Bolger & Laurenceau, 2013, p. 31). Other advantages include the reduction of memory and method biases (Beal, 2015).

Chapter 4 addresses the questions: What is permeability, how can we measure it for the group of older adults and other social groups, and how does it affect GI and coping strategies? As previously mentioned, permeability of group boundaries is a concept that is key to the understanding of intergroup relations and importantly of GI. We were therefore interested in assessing permeability perceptions of older adults. Assessing this concept for the group of older adults is particularly interesting because they are a special group in terms of perceived

permeability: considering oneself as an older adult is highly subjective and personal. Surprisingly, when reviewing the existent literature we realized that there existed neither a formal conceptualization nor a validated measure of permeability. While laboratory studies mainly conceptualized permeability as the possibility of changing group membership, field studies conceptualized permeability as the possibility of changing hierarchical status. Chapter 4 integrates these existing views and formalizes the concept of permeability as *the perceived objective or subjective possibility of changing group membership, and/or of changing hierarchical status.* Furthermore, Chapter 4 provides a formal tool to measure permeability validating it on various low social status groups: the group of older adults, overweight people, ethnic minorities, women, and the lower educated. Chapter 4 utilizes a cross-sectional multi-study approach and follows a strict procedure of measurement validation: it uses both deductive and inductive approaches to item generation; it uses an iterative process of exploratory factor analyses for item reduction; it achieves a homogeneous clustering of the factors by conducting cluster analysis; it assesses whether the scale measures the same constructs across groups by conducting analyses of measurement invariance; it tests whether the developed scale relates to constructs as predicted by theories and previous findings by studying its correlates with similar (convergent validity), differing (discriminant validity) and predicting concepts (criterion-related validity); and, it tests the novel hypothesis that groups may differ in their permeability perceptions depending on whether category membership is biologically determined or innate, since this characteristic influences the members' possibility of accessing the outgroup.

The developed scale thus allowed us to compare the group of older adults with other low social status groups in terms of their permeability perceptions and to study the consequences that permeability has on these groups' identity, attitudes, and behavioral intentions. Although Chapter 4 applies the scale exclusively to low social status groups, it should be applicable to high status groups and to other types of social groups (e.g., ideological, political groups).

Chapter 5 concludes the present dissertation with a summary of the research findings and a discussion on the main theoretical and practical implications of these findings. Furthermore, the chapter highlights some limitations in the scope of the findings and proposes opportunities for future research.

Chapter 2

Feeling younger and identifying with older adults: Testing two routes to maintaining well-being in the face of age discrimination

Note: Chapter 2 was published as
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Abstract

Integrating the social identity and aging literatures, this work tested the hypothesis that there are two independent, but simultaneous, responses by which adults transitioning into old age can buffer themselves against age discrimination: an individual response, which entails adopting a younger subjective age when facing discrimination, and a collective response, which involves increasing identification with the group of older adults. In three experimental studies with a total number of 488 older adults (50 to 75 years of age), we manipulated age discrimination in a job application scenario and measured the effects of both responses on perceived health and self-esteem. Statistical analyses include individual study results as well as a meta-analysis on the combined results of the three studies. Findings show consistent evidence only for the individual response, which was in turn associated with well-being. Furthermore, challenging previous research, the two responses (adopting a younger subjective age and increasing group identification) were not only theoretically, but also empirically distinct. This research complements prior research by signaling the value of considering both responses to discrimination as complementary rather than mutually exclusive.

Age discrimination against older adults is pervasive and has been shown to negatively affect self-esteem, cognition, behavior, physiological function, health, willingness to live, and even mortality (Levy, 2003; Moor et al., 2006; Rodin & Langer, 1980). Although there is a wealth of research on responses to discrimination of social groups other than age in the social psychology literature, researchers in this area have paid relatively little attention to *age* discrimination (North & Fiske, 2012). It thus remains open whether existing knowledge on responses to discrimination can be generalized to older adults. In contrast to other frequently studied stigmatized groups, such as gender or racial groups, age is not a stable characteristic as everybody eventually becomes an 'older adult'. This leaves us with a lack of knowledge on how older adults respond to age discrimination and which strategies help them to protect their well-being when facing discrimination.

Within the social psychological literature, a large body of research on social identity suggests that older adults might engage in collective responses to discrimination, such as increasing feelings of connection with other older adults upon feeling discriminated against (Branscombe et al., 1999; Jetten et al., 2001; Schmitt et al., 2002). This is based on the assumption that social identities have well-being advantages, even for those who feel disadvantaged due to their group memberships. For example, stronger group identification – via increased feelings of connection with one's group – can provide support in dealing with experiences of discrimination (Jetten et al., 2012).Yet these studies have largely focused on ethnic minorities and women, not on older persons. Research in the area of aging has almost exclusively focused on responses to older age stereotypes, and rarely on experiences of discrimination (see Stephan, Sutin, & Terracciano, 2015 for an exemption). This work suggests that older adults may prefer a more individual response to deal with concerns about older age, for example by considering themselves subjectively younger than their actual age (Teuscher, 2009; Weiss & Freund, 2012). Despite these quite different potential responses to discrimination, no work so far has taken an integrative approach to consider the different ways in which older adults respond to discrimination and how this affects psychological well-being.

The present work integrates the aging and social identity literatures to examine two potential coping responses older targets may follow in response to age discrimination: feeling younger and increasing identification with the group of older people. At first sight, these two responses might seem each other's opposites: Older adults who feel younger should also identify less with the group of older adults. Accordingly, with few exceptions (Weiss & Lang, 2009, 2011), subjective age and group identification have been seen as inverse and interchangeable within aging research (Heckhausen & Krueger, 1993; Kaufman & Elder Jr., 2002; Levy, 2003; Logan et al., 1992). In this study, we clearly differentiate the two constructs. We assume that feeling younger (individual response) and feeling connected with one's age group (collective response) may both separately buffer older adults against experiences of discrimination. Therefore, we first test whether the individual and collective responses are not only theoretically, but also empirically distinct concepts. More importantly, we explore the idea that they may be two distinct routes to explain the effects of discrimination on well-being in older adults entering old age. Specifically, we

investigate how these routes affect two important well-being outcomes of discrimination: subjective health, considered a main constituent of successful aging (Freund & Riediger, 2003), which has received little attention in the experimental social psychological literature on discrimination (but see S. A. Haslam, Jetten, Postmes, & Haslam, 2009), and self-esteem, a frequently studied outcome of discrimination (Schmitt et al., 2014).

Subjective age and group identification as distinct responses to discrimination

The strategies available to older adults in the face of discrimination may differ from those available to members of more typically studied social groups such as women and ethnic minorities. This is because the group boundaries of the categories of women and ethnicity are typically experienced as clear and undisputed. Indeed, the social psychological literature has mainly considered groups with impermeable boundaries, groups that members cannot leave individually. For this reason collectively oriented responses, directed at the group as a whole, have been the main focus of research. Within this approach, the Rejection Identification Model suggests a collectively oriented way of coping with discrimination by which targets increase their levels of identification with their social group as a means of seeking support from other group members (Branscombe et al., 1999; Jetten et al., 2001; but see Garstka et al., 2004). Thereby, identifying with the devalued group buffers well-being in the face of discrimination.

Evidence for the Rejection Identification Model has been found among many types of stigmatized groups (e.g., African Americans (Branscombe et al., 1999); women (Schmitt et al., 2002); body piercers (Jetten et al., 2001). One of the few studies in the area of discrimination that has considered older adults also supported the Rejection Identification Model: older adults showed increased levels of identification with their age group in response to age discrimination, which in turn, alleviated the harmful effects of age discrimination on psychological well-being (Garstka et al., 2004). Importantly, this work considered adults with a mean age of 75, an age at which boundaries between old and young are relatively clear. It therefore remains open whether identification also buffers against discrimination when group boundaries are more flexible, such as for middle aged adults entering older ages (e.g., Stroebe et al., 2011).

The fact that boundaries between middle-aged and older adults are flexible – such that it is not clear whether and when to define oneself as an older adult – provides the potential for additional responses to age discrimination. Indeed, older adults have been shown to be flexible in assessments of their own age and whether they "feel old" (e.g., Montepare & Lachman, 1989; Steverink, Westerhof, Bode, & Dittmann-Kohli, 2001). Older adults may be motivated to appear and to feel younger, for example by changing physical appearance via cosmetic surgery and non-surgical cosmetic procedures (Clarke & Griffin, 2008; Teuscher, 2009), or by construing their subjective age to be younger than their chronological age – a phenomenon referred to as subjective age bias. Subjective age bias is thought to work as a self-enhancing strategy because looking, acting and feeling young is considered to be something positive, at least in Western cultures, and because feeling younger restores feelings of control which are hampered at older ages (Heckhausen, 1997; Teuscher, 2009).

Interestingly, the gap between subjective and chronological age tends to increase with age (Kaufman & Elder Jr., 2002; Montepare & Lachman, 1989). Furthermore, subjective age has been shown to vary daily as a function of affective experiences (Kotter-Grühn et al., 2015). Moreover, recent research has started to link subjective age bias with experiences of age stigmatization. One large correlational study has revealed a negative, albeit very small relationship (r = -.007) between chronic experiences of age discrimination and subjective age bias (Stephan et al., 2015). However, given the correlational nature of the study data, it is possible that this is because those who 'feel older' are more aware of age discrimination, and not necessarily because they objectively experience more discrimination. In contrast, experimental manipulations of exposure to negative stereotypes about aging have been shown to *increase* subjective age bias: Studies that manipulate the salience of stereotypes found that older adults are more likely to feel younger when negative stereotypes of their age are made salient, and to assimilate to pictures of middle-aged as opposed to older adults when receiving negative as opposed to positive or neutral information about their age (Weiss & Freund, 2012; Weiss & Lang, 2011). Note that these prior experimental studies have exposed participants to age stereotyping (the cognitive manifestation of prejudice), not discrimination (the behavioral manifestation of prejudice that concerns personally felt, and experienced, social devaluation (Dovidio, Brigham, Johnson, & Gaertner, 1996)). It thus remains open whether increased subjective age bias also occurs in response to experimental manipulations of age discrimination. The present work explores this potential individual level response and assess whether experiences of discrimination also increase subjective age bias (as research on stereotyping suggests), such that greater perceptions of age discrimination are associated with lower subjective age perceptions.

Importantly, subjective age bias also has the potential to benefit psychological well-being and health in the face of discrimination. Notably, experimental research so far has not considered the processes underlying the relation between discrimination and health via subjective age bias. Correlational data has found subjective age bias to be positively correlated with psychological well-being, subjective health, life satisfaction, positive affect, and self-esteem (Montepare, 2009; Weiss & Lang, 2011; Westerhof & Barrett, 2005). Translating these findings to the area of discrimination suggests that: a younger subjective age may boost subjective health and self-esteem in response to discrimination.

Can individual (subjective age) and collective responses (group identification) coexist?

The considerations presented above suggest that there may be two potential routes by which older adults can respond to age discrimination: a collective route via increased group identification, and an individual route via increased subjective age bias. In the aging literature, these two routes are often conflated as aging researchers tend to use the term "age group identification" to refer to the concept of subjective age. Indeed, in much of the aging literature, *age group identification*—how much older adults identify with the group of older adults—is conceptualized as *subjective age*—how old they feel (Heckhausen & Krueger, 1993; Kaufman & Elder Jr., 2002; Levy, 2003; Logan et al., 1992). An

exemption is the work of Weiss and Lang (Weiss & Lang, 2009, 2011), which previously measured age-group identification and subjective age bias as distinct constructs though without distinguishing them at the conceptual level. Nevertheless, the dominant view of age group identification and subjective age bias as each other's opposites suggests that there should be an inverse relation between the two: The younger older adults feel, the less they identify with older adults. The present work challenges this view by demonstrating the empirical distinctiveness of both concepts, but more importantly, by suggesting that subjective age and age group identification may target qualitatively different types of coping responses – either at the individual or at the collective level.

Indeed, this distinction between individual versus collective level responses is one that is gaining increasing attention within social psychology. Traditionally, individual responses, seeking to personally resolve and/or avoid the disadvantages (e.g., discrimination) associated with one's group membership, have been seen as mutually exclusive from collective responses. Such collective responses, in which group members seek to collectively resist disadvantage, for example by displaying solidarity or engaging in collective actions to fight stigma within society (Tajfel & Turner, 1979), are thought only to take place when individual responses are not available (Taylor & McKirnan, 1984; Wright et al., 1990). However, more recently it has been argued that responses which are seen as individually motivated may actually serve the collective (Stroebe, Wang, & Wright, 2015), and that a strong commitment to the collective need not preclude individual action (Derks, Van Laar, & Ellemers, 2007b). Indeed, research on the queen bee effect reveals that women can cope with disadvantage by working at individual advancement in a male dominated environment (an individual response) while at the same time feeling highly connected to and identified with their gender group (Derks, van Laar, Ellemers, & de Groot, 2011). This finding dovetails with historical examples of women's rights movements in which women adopted behaviors of the high status group (e.g., appearing strong, slogans such as 'we can do it') yet at the same time remained highly identified with other women.

Furthermore, a correlational study by Weiss and Lang (Weiss & Lang, 2011) found that feeling younger (individual response) and identifying with the group of older adults (collective response) were negatively associated for adults over the age of 65, but that this relationship was weaker for adults between 40 and 64 years of age and non-significant for younger adults between 18 and 39 years of age. The current study focuses on a more permeable group, that is, older adults in their fifties to seventies. We predict that older adults, especially in the period of transition from midlife to old age, cope with negative societal attitudes and behavior by feeling and acting younger while at the same time feeling identified with the group of older adults.

Summary of hypotheses

In three studies we examined the proposed alternative routes to maintain well-being in face of age discrimination in the work context. Discrimination against people in their last years of employment (i.e. between 50 and 75 years of age) is well-documented and found to be pervasive, widely legitimated and negatively affecting well-being (Desmette & Gaillard, 2008; Posthuma &

Campion, 2009; von Hippel, Kalokerinos, & Henry, 2012). Therefore, we deemed the work context to be a relevant and representative domain to manipulate age discrimination and test our hypotheses. We predicted that the presence as opposed to absence of age discrimination in a job application scenario strengthens subjective age bias such that older participants feel younger (Hypothesis 1a) and, at the same time, leads to higher older age group identification (Hypothesis 1b). We further predicted that feeling younger (Hypothesis 2a) and identifying more strongly with the older age group (Hypothesis 2b) are both related to higher subjective health and self-esteem. Furthermore, we predicted that both responses mediate the effects of discrimination on well-being, such that the negative effects of age discrimination on subjective health and on self-esteem are diminished through a stronger subjective age bias (Hypothesis 3a) and a stronger identification with the group (Hypothesis 3b).

Method

Given that the three studies were very similar in design, procedure, and measures, they are described conjointly in one Method section.

Samples

Participants of all three studies were located in the U.S.A. and were aged 50 to 75 years. We selected people above 50 years of age as the United States anti-age discrimination law protects applicants/employees above age 40 and adults above 50 are considered older adults in organizational settings. Participants were unaware of this age-based selection, those who indicated being of ages between 50 and 75 on an initial demographic survey were invited to participate in the present follow up study. Not knowing the power of the effect a priori, in Study 1 we aimed for, and stopped collecting data, when we reached a sample size of 60 participants per cell. This was based on a rule of thumb that this gives 90% power of detecting a medium size effect ($r = .30$), see Cohen (1977, p.384). Post-hoc analyses confirmed that the main results achieved adequate power. According to power analyses based on the results of Study 1 on the two routes, in Study 2 we aimed at 144 participants to achieve 80% power on the main results. According to power analyses based on the results of Studies 1 and 2 on the two routes, in Study 3 we aimed at 100 participants per cell to achieve 80% power on the main results.

Study 1 and Study 2 included 126 and 145 participants, respectively, who were recruited online via Amazon's Mturk. Mturk or Mechanical Turk is a site from Amazon Web Services that recruits participants around the world to do small jobs through the internet, such as completing questionnaires for businesses or researchers. We ensured that participants of Study 2 had not participated in Study 1 via participants' Mturk identification numbers. Participants who had participated in Study 1, as identifiable via their ID numbers, were not given access to Study 2. Study 3 included 217 participants recruited online via Qualtrics Panels who was contracted to distribute the survey to the targeted respondents, and to collect the data. Participants of Studies 1 and 2 viewed an advertisement of our study in MTurk's webpage as a short demographic questionnaire with the possibility of participating in a follow up study about

"general experiences" based on their demographics. Following MTurk typical payment rates (Bohannon, 2011), participants in Studies 1 and 2 received 0.90 dollars for survey completion. Participants in Study 3 received an email invitation of Qualtrics Panels informing them that the survey was for research purposes only, how long the survey was expected to take and what incentives were available. Following Qualtrics Panels' regulations, remuneration of participants in Study 3 varied depending on the length of survey, panelist profile and acquisition difficulty. The reward type varied and included cash, airline miles, gift cards, redeemable points, sweepstakes entrance and vouchers. Members could unsubscribe at any time.

In Study 1, a total number of 1285 participants replied to the demographic screening survey of which 143 complied with the age requirement. Of these, 11 participants did not complete the survey's main questions and were excluded from analyses. In Study 2, a total number of 1556 participants replied to the demographic screening survey of which 164 complied with the age requirement. Of these, 11 participants did not complete the survey's main questions and were excluded from analyses. In Study 3, a total number of 235 participants completed the survey reported in this manuscript (see Design and Procedure for a clarification on this issue) of which 34 did not complete the survey's main questions and were excluded from analyses (see Table 2.1 for more information on the samples).

Ethics statement

Before starting the studies a consent form was administered to participants. Participants who did not approve the consent form were not asked to complete the measures. After completion of all measurements, participants were thoroughly debriefed, and were thanked for their participation. Ethical clearance for Study 1, Study 2, and Study 3 was provided by the University of Groningen for research project number ppo-012-114, ppo-013-061, and ppo-015-207, respectively.

Table 2.1
Samples composition and participants demographics of Studies 1, 2 and 3.

Study	Sample size	No. Outliers	Mean Age	SD Age	% female	Work status	Level of education	Recruitment date	Drop-out rate
1	126	6[1]	57.3	5.79	66.90%	27% full-time; 20.6% part-time; 22.2% unemployed; 30.2% retired	8.7% high school; 6.3% vocational or technical school; 25.2% some college; 35.4% college degree; 15.7% master's degree; 3.1% professional degree; 3.1% doctoral degree; 2.5% other	Mar 2013-Jun 2013	7.69%
2	145	8[2]	57.16	5.43	66.20%	38.6% full-time; 22.1% part-time; 20.7% unemployed; 18.6% retired	14.5% high school; 8.3% vocational or technical school; 29.7% some college; 35.9% college degree; 9% master's degree; 1.4% professional degree; 1.4% doctoral degree	Nov 2013-Jan 2014	6.70%
3	217	17[3]	56.81	5.5	59.40%	58.1% full-time; 19.8% part-time; 22.1% unemployed	29% high school; 9.2% vocational or technical school; 24.4% some college; 26.7% college degree; 8.8% master's degree; 0.9% professional degree; 0.5% doctoral degree; 0.5% other	Jul-16	14.46%

Notes. [1] Five persons stated that their data should be excluded (Meade & Craig, 2012) and one person appeared to be an outlier on the main dependent variable subjective health based on outlier analyses via Cook's (Cook, 1977) distance (i.e., using the cut-off value of Cook's distance being larger than four divided by the number of observations). [2] Participants appeared to be outliers on the main dependent variable subjective health based on outlier analyses via Cook's (Cook, 1977) distance. [3] Four persons stated that their data should be excluded (Meade & Craig, 2012) and thirteen appeared to be outliers on the main dependent variable subjective health based on outlier analyses via Cook's (Cook, 1977) distance.

Design and procedure

After providing informed consent, participants were randomly assigned to one of two conditions, discrimination or control, in a between-subjects experimental design. In Study 3 we included one additional manipulation where people either hear that they were rejected for the job (rejection condition) or they do not receive any answer (no rejection condition). The design of Study 3 was therefore a 2 (discrimination vs. no discrimination) by 2 (rejection vs. no rejection) experimental design. To be able to compare results of the three studies, in this manuscript we only report the data of the rejection conditions which are identical across studies. Participants read a hypothetical discrimination scenario adapted from Stroebe and colleagues (2011), which is commonly used in the discrimination literature (see also Major, Kaiser, & Mccoy, 2003; Schmitt et al., 2002). They were asked to imagine that they were taking part in a job selection procedure for a highly appealing job (i.e., in their area of expertise, high-ranking, central to the company, with high income, flexible working hours, and fringe benefits). This was followed by additional information about the interviewer, which differed per condition. In the *discrimination* condition, the interviewer was described as someone who is prejudiced with regard to older people: selecting applicants that were described conform stereotypes of a young person (i.e., "according to him the right candidate should be highly productive, flexible, agile and willing to learn about new technologies") and selecting more young than old applicants (i.e., "80% younger than 50 years when 50% of the candidates were above 50 years old"). In the *control* condition, the description of the interviewer was neutral: Someone who selects applicants based on their competencies and whose latest selection decisions favored 50% applicants younger than 50 years when 50% of the candidates were above 50 years old. Following this description, participants in both conditions were informed that the interviewer did not consider them a suitable candidate. Afterwards, participants completed the dependent variables and additional measures not included in this report: Emotion regulation strategies, perceived status of older adults (Study 1); emotions, perceived permeability, desired age and longevity (Studies 1 and 2); felt similarity with the group of older adults, legitimacy of treatment (Study 2); stereotypes of older and younger adults (Studies 2 and 3); action intentions, perceived group discrimination, control questions (assessing attention of participants and credibility of the study), additional demographics (Studies 1, 2 and 3).

Measures

We used identical measures in the three studies to measure the effectiveness of our manipulation as age discrimination and as personal attribution, group identification, subjective age bias, subjective health, and state self-esteem. The items for each of the multi-item measures presented below were averaged into scales for analyses.

Manipulation checks (attributions)

Two items based on Schmitt and Branscombe (Schmitt & Branscombe, 2002a) assessed whether participants attributed the outcome of the selection procedure to *age discrimination* ("I would think that the outcome in the selection procedure was due to age discrimination" and "I would think that the outcome in the selection procedure was based on my age"). Two further items based on Schmitt and Branscombe (Schmitt & Branscombe, 2002a) assessed participants' *personal attribution* ("I would think that the outcome in the selection procedure was due to who I am" and "I would think that the outcome in the selection procedure was due to something about me"). Items were rated on a scale ranging from 1 (*not at all agree*) to 7 (*very much agree*).

Group identification

Identification with the group of older adults was assessed via three items adapted from Doosje, Branscombe, Spears, and Manstead (Doosje, Branscombe, Spears, & Manstead, 1998), e.g., "I identify with the group of older adults". Items were rated on a scale ranging from 1 (*not at all*) to 7 (*very much*).

Subjective age bias

Participants completed the item: "Most of the time, I feel as though I were about age ___". *Subjective age bias* was calculated by subtracting subjective age from participants' chronological age (see also Weiss & Lang, 2011; Westerhof & Barrett, 2005). Higher values indicate the tendency to feel younger relative to one's chronological age.

Subjective health

Subjective health was measured by aggregating the scores of three items based on Helmer, Barberger-Gateau, Letenneur, and Dartigues (1999) and Idler and Benyamini (1997), one each referring to *physical health* ("How would you rate your overall physical health at the present time?"), *mental health* ("How would you rate your overall mental health at the present time?"), and *overall health* ("Compared to other people my age, I believe my overall health to be …"). The scale ranged from 1 (*poor*) to 5 (*excellent*).

State self-esteem

State self-esteem was measured with Heatherton and Polivy's (Heatherton & Polivy, 1991) seven-item performance state self-esteem subscale (e.g., "I feel confident about my abilities"). Participants were instructed to rate the statements in terms of how true they were at the current moment on a scale ranging from 1 (*not at all*) to 5 (*extremely*).

Statistical analysis

The Results section presents the results of each individual study as well as a meta-analysis on the combined results. The meta-analysis was computed using the Metafor package (version 1.9-9) in R (version 3.2.4). The most conservative random-effects model was chosen in which the random variance component was determined using restricted maximum likelihood (Viechtbauer, 2010). Effect sizes (standardized regression coefficients ß) were calculated for the examined relationships.

Results

Preliminary analyses

Reliabilities, means, standard deviations and correlations of central variables are shown in Tables 2.2 - 2.4. There were no differences per condition in age, gender, level of education, or employment status (all *p*'s > .05) and the pattern of results did not change when controlling for these demographic characteristics.

Confirming the independence of the individual and the collective responses to age discrimination, correlations between subjective age bias and group identification were small and ranged from marginal to non-significant (Study 1: $r(124) = -.17$, $p = .062$; Study 2: $r(143) = -.06$, $p = .497$; Study 3: $r(215) = -.08$, $p = .219$). The meta-analysis showed that the combined correlation between subjective age bias and group identification was small and negative with a significant average effect size of $\beta = -0.10$, $SE = 0.04$, $Z = -2.14$, $p = .032$, CI [-0.18, -0.01] (see Figure 2.1).

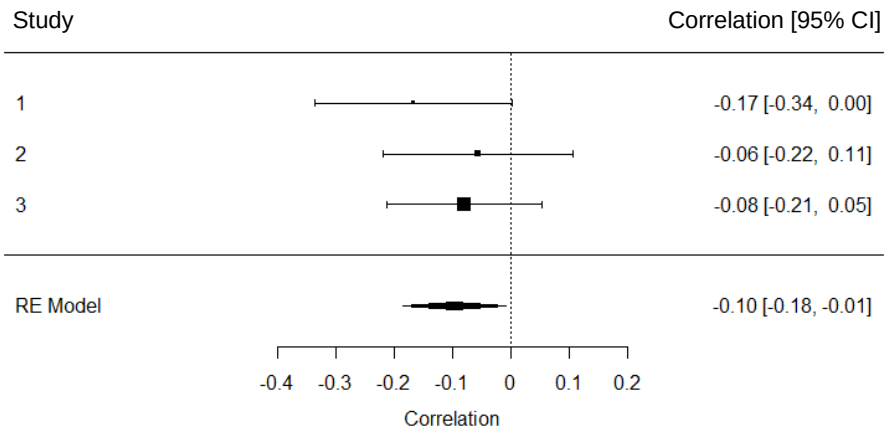

Figure 2.1. Meta-analytical results of the correlation between subjective age bias and group identification. This forest tree includes the correlation between subjective age bias and group identification of the 3 studies with corresponding 95% confidence intervals in the individual studies. The summary polygon at the bottom of the plot shows the results from a random-effects model when analyzing all 3 studies. RE Model = Random-effects model.

Table 2.2
Reliabilities, means and standard deviations (per condition), and correlations between central study variables in Study 1.

		Cronbach's α	Control		Discrimination								
			M	*SD*	*M*	*SD*	1	2	3	4	5	6	7	8
1	Age	-	57.66[a]	6.42	56.95[a]	5.14	-							
2	Gender[1]	-	64.5%[a]	-	69.2%[a]	-	.10	-						
3	Discrimination Attribution	.97	3.27[a]	2.05	5.45[b]	1.25	.04	.09	-					
4	Personal Attribution	.81	5.31[a]	1.21	4.33[b]	1.67	-.02	-.14	-.34***	-				
5	Group Identification	.84	5.20[a]	1.56	5.86[b]	1.07	.10	.03	.32***	-.10	-			
6	Subjective Age	-	48.29[a]	11.61	42.33[b]	9.65	.39***	.24**	-.07	.12	.21*	-		
7	Subjective Age Bias	-	9.37[a]	10.32	14.08[b]	9.4	.15	-.20*	.12	-.14	-.17	-.85***	-	
8	Subjective Health	.86	3.58[a]	0.99	3.95[b]	0.75	.10	-.12	.19*	-.15	-.13	-.39***	.48***	-
9	State Self-Esteem	.78	4.19[a]	0.66	4.39[a]	0.43	.16	-.19*	.12	-.13	.01	-.16	.28**	.45***

Notes. N = 126. Gender is coded 1 for female and 2 for male. * p < .05; ** p < .01; *** p < .001. a,b Means with differing superscripts within rows are significantly different at the p < .05. [1]Given percentages refer to percentage of female participants on each condition.

Table 2.3
Reliabilities, means and standard deviations (per condition), and correlations between central study variables in Study 2.

			Control		Discrimination									
		Cronbach's α	*M*	*SD*	*M*	*SD*	1	2	3	4	5	6	7	8
1	Age	-	57.46[a]	5.16	56.84[a]	5.70	-							
2	Gender[1]	-	67.1%[a]	-	65.3%[a]	-	-.01	-						
3	Discrimination Attribution	.97	3.21[a]	1.91	5.08[b]	1.49	.13	-.01	-					
4	Personal Attribution	.80	4.58[a]	1.72	3.81[b]	1.57	-.18*	.01	-.18*	-				
5	Group Identification	.81	5.54[a]	1.42	5.13[a]	1.38	.15	-.05	.06	.12	-			
6	Subjective Age	-	50.25[a]	14.42	43.24[b]	9.34	.26**	.02	-.06	.11	.12	-		
7	Subjective Age Bias	-	7.22[a]	13.98	13.61[b]	9.54	.17*	-.01	.12	-.19*	-.06	-.91***	-	
8	Subjective Health	.82	3.53[a]	0.86	3.86[b]	0.64	.11	-.01	.06	-.24**	-.08	-.35***	.40***	-
9	State Self-Esteem	.76	4.20[a]	0.62	4.29[a]	0.48	.13	.09	-.04	-.24**	.00	-.20*	.26***	.29***

Notes. $N = 145$. Gender is coded 1 for female and 2 for male. * $p < .05$; ** $p < .01$; *** $p < .001$. [a,b] Means with differing superscripts within rows are significantly different at $p < .05$. [1]Given percentages refer to percentage of female participants on each condition.

Table 2.4
Reliabilities, means and standard deviations (per condition), and correlations between central study variables in Study 3.

		Cronbach's α	Control		Discrimination								
			M	*SD*	*M*	*SD*	1	2	3	4	5	6	7	8
1	Age	-	57.35[a]	5.84	56.25[a]	5.07	-							
2	Gender[1]	-	58.2%[a]	-	60.7%[a]	0.49	.22**	-						
3	Discrimination Attribution	.91	3.23[a]	1.78	4.57[b]	1.61	.17*	-.05	-					
4	Personal Attribution	.66	4.10[a]	1.53	4.33[a]	1.46	-.04	.02	.22**	-				
5	Group Identification	.73	5.00[a]	1.15	5.04[a]	1.20	.10	.06	.11	.11	-			
6	Subjective Age	-	47.37[a]	9.82	45.80[a]	9.86	.32***	.19**	.04	.12	.14*	-		
7	Subjective Age Bias	-	9.98[a]	9.20	10.49[a]	10.11	.25***	-.08	.06	-.15*	-.08	-.84***	-	
8	Subjective Health	.76	3.72[a]	0.66	3.77[a]	0.67	.24***	.04	.07	-.05	.10	-.11	.25***	-
9	State Self-Esteem	.77	4.05[a]	0.65	4.03[a]	0.62	.06	.00	-.16*	-.21**	.11	-.05	.08	.31***

Notes. $N = 217$. Gender is coded 1 for female and 2 for male. * $p < .05$; ** $p < .01$; *** $p < .001$. a,b Means with differing superscripts within rows are significantly different at the $p < .05$. [1]Given percentages refer to percentage of female participants on each condition.

Manipulation checks (attributions)

Analyses of variance of the discrimination manipulation on attributions to age discrimination revealed a main effect of condition in all studies: In line with the manipulation, people in the discrimination conditions attributed the outcome of the selection procedure significantly more to age discrimination than people in the control conditions in Study 1, $F(1, 124) = 53.05$, $p < .001$, $\eta^2_{partial} = .30$, Study 2, $F(1, 143) = 43.11$, $p < .001$, $\eta^2_{partial} = .23$, and Study 3, $F(1, 215) = 33.52$, $p < .001$, $\eta^2_{partial} = .14$. Similarly, there was a main effect of condition on personal attributions in two of the three studies: People in the control conditions attributed the outcome of the selection procedure significantly more to the self than people in the discrimination conditions in Study 1, $F(1, 124) = 14.12$, $p < .001$, $\eta^2_{partial} = .10$, and Study 2, $F(1, 143) = 7.75$, $p = .006$, $\eta^2_{partial} = .05$; though not in Study 3, $F(1, 215) = 1.20$, $p = .274$, $\eta^2_{partial} = .01$.

Hypothesis 1. Effect of condition on subjective age bias and group identification

Our hypotheses are based on the postulate that the condition effects are driven by age discrimination. In order to rule out that condition effects would be driven by the control condition (attributions to the self) rather than the experimental condition (attributions to discrimination), we controlled for personal attributions in all analyses. Note however, that the pattern of results was comparable when attributions were not included. The main results of all hypothesis tests are reported in Table 2.5. Results of Studies 1 and 2 (but not 3) confirmed Hypothesis 1a: participants in the discrimination condition reported higher subjective age bias than those in the control condition. These effects were confirmed by the meta-analysis which revealed a significant overall effect across studies ($\beta = 0.15$).

In weak support for Hypothesis 1b (see Table 2.5) participants in the discrimination condition reported higher group identification than those in the control condition in Study 1, but not in Studies 2 or 3. The meta-analysis revealed a non-significant overall effect across studies ($\beta = -0.03$).

Hypothesis 2. Effects of subjective age bias and group identification on well-being

Confirming Hypothesis 2a, subjective age bias was positively related to subjective health in all three studies (when controlling for discrimination, group identification and personal attribution) which resulted in a significant combined effect across studies ($\beta = 0.34$, see Table 2.5). Moreover, analyses showed that subjective age bias was related to higher state self-esteem (when controlling for discrimination, group identification and personal attributions) in Study 1 and in Study 2 but not in Study 3. Nevertheless, the meta-analysis revealed a significant combined effect across studies ($\beta = 0.18$, see Table 2.5).

In contrast with Hypothesis 2b, analyses showed that group identification was unrelated to subjective health and self-esteem (when controlling for discrimination, subjective age bias and personal attributions) in all three studies,

which resulted in non-significant combined effects across studies (ß = 0.00 and ß = 0.07, respectively, see Table 2.5).

Table 2.5
Statistical tests of main results in Studies 1 to 3 and meta-analysis of the combined effects of all three studies.

Result tested	Study	Effect size (SE)	Test	p-value	95% CI [LL, UL]
Discrimination → SAB (Hypothesis 1a)	1	*b* = 4.25 (1.94)	*t* (123)= 2.19	0.030	[0.41, 8.09]
	2	*b* = 5.60 (1.91)	*t* (142) = 2.94	0.004	[1.83, 9.37]
	3	*b* = 0.72 (1.31)	*t* (213) = 0.55	0.581	[-1.85, 3.30]
	meta-analysis	ß = 0.15 (0.07)	*Z* = 2.27	0.023	[0.02, 0.30]
Discrimination → GI (Hypothesis 1b)	1	*b* = 0.65 (0.25)	*t* (123) = 2.59	0.011	[0.12, 1.18]
	2	*b* = -0.34 (0.24)	*t* (142) = -1.46	0.148	[-0.81, 0.12]
	3	*b* = 0.02 (0.16)	*t* (213) = 0.10	0.922	[-0.30, 0.33]
	meta-analysis	ß = -0.03 (0.17)	*Z* = -0.21	0.837	[-0.37, 0.30]
Discrimination → SH (total effect)	1	*b* = 0.32 (0.17)	*t* (123) = 1.97	0.052	[-0.00, 0.65]
	2	*b* = 0.25 (0.13)	*t* (142) = 1.92	0.057	[-0.00, 0.65]
	3	*b* = 0.06 (0.09)	*t* (213) = 0.71	0.481	[-0.12, 0.24]
	meta-analysis	ß = 0.12 (.05)	*Z* = 2.43	0.015	[0.02, 0.21]
Discrimination → SSE (total effect)	1	*b* = 0.17 (0.11)	*t* (123) = 1.57	0.119	[-0.04, 0.38]
	2	*b* = 0.03 (0.09)	*t* (142) = 0.31	0.753	[-0.15, 0.21]
	3	*b* = 0.01 (0.09)	*t* (213) = 0.12	0.903	[-0.16, 0.18]
	meta-analysis	ß = 0.05 (0.05)	*Z* = 1.12	0.263	[-0.04, 0.14]
SAB → SH (controlling for discrimination, group identification and personal attributions; Hypothesis 2a)	1	*b* = 0.04 (0.01)	*t* (121) = 4.22	< .001	[0.02, 0.05]
	2	*b* = 0.02 (0.00)	*t* (140) = 4.82	< .001	[0.01, 0.03]
	3	*b* = 0.02 (0.01)	*t* (211) = 3.45	< .001	[0.01, 0.03]
	meta-analysis	ß = 0.34 (0.05)	*Z* = 6.32	< .001	[0.23, 0.44]
SAB → SSE (controlling for discrimination, group identification and personal attributions; Hypothesis 2a)	1	*b* = 0.01 (0.01)	*t* (121) = 2.45	0.016	[0.00, 0.03]
	2	*b* = 0.01 (0.00)	*t* (140) = 2.73	0.007	[0.00, 0.02]
	3	*b* = 0.00 (0.01)	*t* (212) = 0.67	0.503	[-0.01, 0.01]
	meta-analysis	ß = 0.18 (0.06)	*Z* = 2.98	0.003	[0.06, 0.29]

GI → SH (controlling for discrimination, subjective age bias and personal attributions; Hypothesis 2b)	1	*b* = -0.06 (0.06)	*t* (121) = -1.16	0.248	[-0.17, .05]
	2	*b* = -0.01 (0.05)	*t* (141) = -0.32	0.752	[-0.11, 0.08]
	3	*b* = 0.07 (0.04)	*t* (211) = 1.74	0.083	[-0.01, 0.15]
	meta-analysis	ß = 0.00 (0.06)	*Z* = 0.07	0.939	[-0.12, 0.13]
GI → SSE (controlling for discrimination, subjective age bias and personal attributions; Hypothesis 2b)	1	*b* = 0.00 (0.04)	*t* (121) = 0.11	0.910	[-0.07, 0.08]
	2	*b* = 0.01 (0.03)	*t* (140) = 0.47	0.642	[-0.05, 0.07]
	3	*b* = 0.07 (0.04)	*t* (211) = 1.68	0.095	[-0.01, 0.16]
	meta-analysis	ß = 0.07 (0.05)	*Z* = 1.64	0.101	[-0.01, 0.16]
Discrimination → SAB → SH (controlling for group identification and personal attributions; Hypothesis 3a)	1	*b* = 0.16 (0.08)	*Z* = 1.90	0.057	[0.03, 0.36]
	2	*b* = 0.12 (0.05)	*Z* = 2.49	0.014	[0.05, 0.23]
	3	*b* = 0.01 (0.02)	*Z* = 0.52	0.600	[-0.03, 0.07]
	meta-analysis	ß = 0.05 (0.05)	*Z* = 1.12	0.263	[-0.04, 0.14]
Discrimination → SAB → SSE (controlling for group identification and personal attributions; Hypothesis 3a)	1	*b* = 0.06 (0.03)	*Z* = 1.56	0.118	[0.01, 0.15]
	2	*b* = 0.06 (0.03)	*Z* = 1.94	0.053	[0.01, 0.13]
	3	*b* = 0.00 (0.01)	*Z* = 0.31	0.755	[-0.01, 0.04]
	meta-analysis	ß = 0.03 (0.05)	*Z* = 0.66	0.506	[-0.06, 0.12]
Discrimination → GI → SH (controlling for subjective age bias and personal attributions; Hypothesis 3b)	1	*b* = -0.04 (0.04)	*Z* = -0.98	0.326	[-0.16, 0.01]
	2	*b* = 0.01 (0.02)	*Z* = 0.26	0.798	[-0.02, 0.06]
	3	*b* = 0.00 (0.01)	*Z* = 0.08	0.933	[-0.02, 0.03]
	meta-analysis	ß = -0.00 (0.05)	*Z* = -0.11	0.916	[-0.09, 0.08]
Discrimination → GI → SSE (controlling for subjective age bias and personal attributions; Hypothesis 3b)	1	*b* = 0.00 (0.03)	*Z* = 0.10	0.917	[-0.05, 0.06]
	2	*b* = -0.00 (0.01)	*Z* = -0.37	0.710	[-0.04, 0.01]
	3	*b* = 0.00 (0.01)	*Z* = 0.08	0.933	[-0.02, 0.04]
	meta-analysis	ß = -0.00 (0.05)	*Z* = -0.06	0.955	[-0.09, 0 .09]

Notes. SAB = Subjective age bias; GI = Group identification; SH = Subjective health; SSE =State Self-esteem.

Hypothesis 3. Effects of the two routes on well-being

In order to test the mediational role of subjective age bias and group identification in the relationship between discrimination and well-being, we applied Preacher and Hayes' (Preacher & Hayes, 2004) approach for estimating indirect effects in simple mediation models (Hayes, 2013; Model 4). We ran separate mediation models for the two outcome measures, subjective health and state self-esteem. The models included discrimination as predictor, subjective age bias and group identification entered simultaneously as mediators, and personal attribution as covariate. We requested a 95% bias-corrected interval based on 5000 bootstrap samples.

In partial support for Hypothesis 3a, Studies 1 and 2 (but not 3) provided support for a positive indirect effect of age discrimination on subjective health and on self-esteem through subjective age bias. However, the meta-analysis revealed non-significant overall effects across studies (ß = 0.05 and ß = 0.03, respectively, see Table 2.5).

In contrast with Hypothesis 3b, there were no significant indirect effects of age discrimination on subjective health or on self-esteem through group identification in any of the three studies. Obviously, this resulted in non-significant combined effects across studies (ß = -0.00, for both outcomes see Table 2.5).

The meta-analytical results are summarized and visualized in Figure 2.2 (Subjective Health) and Figure 2.3 (State Self-Esteem).

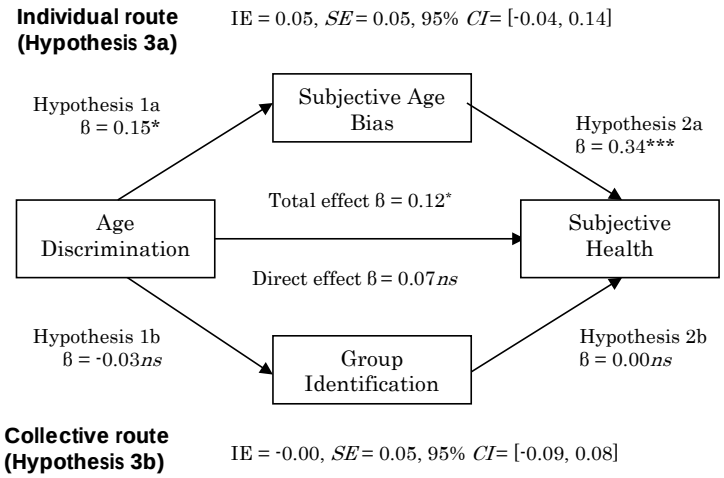

Figure 2.2. Combined results of the collective and the individual routes on subjective health. Estimates are presented in standardized values (β), after partializing the effects of all other relevant variables. IE = indirect effect of independent variable on dependent variable through the proposed mediator. * p < .05; ** p < .01; *** p < .001; ns: non-significant at the .05 level.

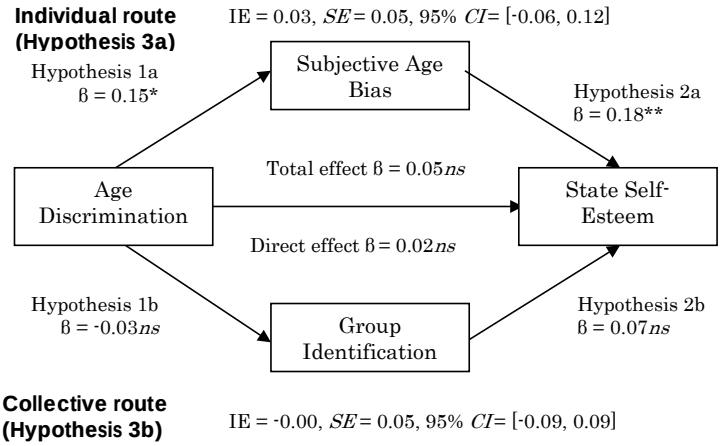

Figure 2.3. Combined results of the collective and the individual routes on state self-esteem. Estimates are presented in standardized values (β), after partializing the effects of all other relevant variables. IE = indirect effect of independent variable on dependent variable through the proposed mediator. * p < .05; ** p < .01; *** p < .001; ns: non-significant at the .05 level.

Discussion

How do older adults buffer themselves against the adverse effects of discrimination? This question has received surprisingly little attention within the social psychological and aging literatures. Whereas the social psychology literature has mainly attended to discrimination of social groups other than age, the aging literature has focused on responses to age stereotypes but not discriminatory behavior. Integrating these literatures, we proposed two parallel routes by which older adults might buffer themselves against experiences of age discrimination: An individual route in which experiences of discrimination are countered by lowering one's felt, compared to actual, chronological age, and a collective route by which targets turn to their group and increase levels of identification with other older adults.

Evidence only for the individual route

Previous aging research has focused on the effects of negative stereotyping rather than age discrimination on people's coping responses and well-being (Weiss & Lang, 2011; Weiss, Sassenberg, & Freund, 2013). However, negative stereotyping and felt discrimination are two distinct phenomena: Discrimination refers to personally felt social devaluation—thus a behavioral manifestation of prejudice—while stereotyping refers to internalized views of the group—thus a cognitive manifestation (Dovidio et al., 1996). The current findings provided support for the individual route by showing for the first time that older adults respond not only to stereotyping, as previously studied, but also to age discrimination by indicating they feel younger. Furthermore, this response may serve to buffer targets against age discrimination as increases in subjective age bias in response to discrimination were related to improved well-being.

Regarding this buffering effect, we note that although the separate effects were significant across studies, we only found indirect effects suggestive of such a buffering process, for Studies 1 and 2. This is not entirely surprising as research indicates that mixed results are highly likely to be encountered when multiple studies are performed (Lakens & Etz, 2017). Yet, possible reasons for this divergence in findings are discussed below in the section on limitations. While additional research in this direction is needed the present results point to the value of considering the individual route, via subjective age, as a valuable and important response to age discrimination.

Findings showed less support for a collective route as age discrimination only affected levels of identification in Study 1. In addition, there was no evidence of a buffering effect of age identification on well-being as there was no relation between identification and subjective health and state self-esteem across studies. This may seem surprising in light of the findings of Garstka and colleagues (Garstka et al., 2004) who did provide support for this buffering effect in older adults. Yet the group of adults in the Garstka study sample was older, with a mean age of 75 compared to 57 in our sample. Arguably this is an age at which the boundaries between old and young may be perceived as more clear-cut than in our sample, making the study more similar to work looking at responses to racial and gender discrimination. Future work should consider different age groups that are classified as 'older adults' in more detail in order to determine whether indeed the extent to which group boundaries are perceived as set versus more flexible, affect preferences for individual versus collective strategies.

Subjective age bias and group identification as distinct constructs

One key assumption in the present work was that subjective age bias and group identification concern separate concepts and constitute different routes to buffering well-being. This idea is in contrast to most of the aging literature that thus far has predominantly considered these concepts as interchangeable. The present work underscores that subjective age bias and identification are not interchangeable, at least in the early stages of old adulthood. Subjective age bias and group identification appeared to be not only theoretically, but also empirically distinct constructs. Furthermore, they were differentially associated with well-being outcomes: Whereas group identification was uncorrelated with well-being across studies, subjective age bias consistently correlated with subjective health and self-esteem across studies. This qualifies the traditional view in the aging literature of subjective age as an indicator of older adults' awareness of their own aging *or* of reduced identification with their age group (cf. Diehl & Wahl, 2010; Kaufman & Elder Jr., 2002).

These findings are important because they underscore that group identification and subjective age should not be conflated. Recognizing their differences and studying them separately opens the possibility to incorporate into the aging literature the effects of group identification as largely explored by the social identity tradition. For example, while subjective age may bring about individual types of strategies to cope with disadvantage such as trying to remain younger by doing exercise, dying one's hair, or training memory skills (Teuscher, 2009), group identification can bring about collective types of strategies such as participating in a demonstration to stop the discrimination of the ingroup

(Becker et al., 2015). Furthermore, a conflation of these two constructs may lead researchers to make faulty predictions. For example, while an induced lower subjective age was shown to increase people's physical strength (Stephan, Chalabaev, Kotter-Grühn, & Jaconelli, 2013), it is unlikely that group identification decreases physical strength. Or as the results of the present studies showed, while subjective age was associated with higher subjective health and self esteem, group identification was not.

From a social identity perspective these findings are important as researchers often assume that group members face a choice between individual or collective responses, implying that these strategies would be mutually exclusive (Tajfel & Turner, 1979). Yet more recent conceptual and empirical approaches suggest that an individual response, such as being individually mobile within an organization, need not preclude a collective response, such as identifying with and supporting members of one's group (Derks, Van Laar, & Ellemers, 2007a; Stroebe et al., 2015). The present research provides further evidence in this direction, suggesting the importance of considering individual strategies as a viable response to discrimination that may also buffer targets against discrimination, while not necessarily undermining loyalty towards one's group. For example, subjective age bias can boost well-being and thus provide resources at the individual level which may be essential for a collective response (e.g., protesting one's discrimination). Group identification may serve a more collective need, the desire to address the disadvantaged position of one's group. Indeed, it has consistently been shown to be an important instigator of collective protest (e.g., Van Zomeren, Postmes, & Spears, 2008). Consequently, the combination of individual resources (feeling young) and group identification (feeling connected with other older adults) may potentially serve to instigate collective responses such as confronting age discrimination against one's group.

In studying the interplay between individual versus collective strategies, an interesting avenue for future research is the comparability across groups. It is often assumed that collective strategies (e.g, group identification) are the most beneficial for well-being (e.g., Branscombe et al., 1999; Schmitt et al., 2014). Our work speaks to the importance of individual strategies as a way of dealing with discrimination for those who are entering old age. We would argue this also points to the importance of considering how different strategies may befit different groups. In line with this reasoning, a recent meta-analysis of effects of discrimination on well-being revealed that gender and racial discrimination have less negative effects on well-being than many other types of discrimination, such as sexual orientation or disability (Schmitt et al., 2014). Yet at present it is not clear which aspect of these group differences (e.g., concealability, controllability) can explain these differences in well-being (Schmitt et al., 2014). We believe that in understanding group differences in well-being, it may be important to study differences in individual versus collective responses to discrimination between groups.

Implications for well-being

As already discussed, findings of the present work suggest that feeling younger is beneficial for older adults' well-being when facing stigma, at least in the short term. A potential intervention could thus be the induction of a younger

subjective age when people feel discriminated because of their age. Previous research has shown that inducing a younger subjective age can be achieved through downward social comparisons with people of same age (Stephan et al., 2013). However, more research is needed to clarify the suitability of such an intervention as we do not fully understand under which conditions a lower subjective age bias is beneficial. For example, we do not know if it is beneficial for adults above our sample's ages, or for chronic forms of discrimination, nor do we know its longer term benefits.

Furthermore, our findings suggest that group identification is not a route which is consistently followed in face of discrimination and that it is not associated with well-being. However, this does not mean that group identification cannot have beneficial properties. In fact, numerous studies have found evidence for indirect positive well-being effects of group identification through the promotion of attitudes and behaviors that counteract the negative effects of stigma (S. A. Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005; Jetten et al., 2012; Jetten, Haslam, Haslam, Dingle, & Jones, 2014; Reynolds, Oakes, Haslam, Nolan, & Dolnik, 2000). Overall, we note that our findings are based on a short-term response to an instance of discrimination. Future research should study more long term effects of individual (subjective age bias) and collective (group identification) effects on well-being.

Limitations

The present work has some limitations. The studies make use of scenarios to induce discrimination, which are often criticized for having low ecological validity. However, for ethical and practical reasons, scenario methods are often the most feasible way to study the effects of discrimination. Accordingly, the discrimination literature often makes use of scenarios to study effects of discrimination experimentally and these studies reveal results comparable to 'non-scenario' studies (Major, Kaiser, et al., 2003; Schmitt & Branscombe, 2002b; Schmitt, Branscombe, & Postmes, 2003, Study 1; Stroebe, Ellemers, Barreto, & Mummendey, 2009, Study 2). In further favor of the validity of the used scenario, participants in Studies 1 and 3 could very well imagine experiencing the proposed situation (Study 1: M = 5.76, SD =1.21; Study 3: M = 5.03, SD =1.39; scale from 1 = *very difficult to imagine* to 7 =*very easy to imagine*), and found the scenario believable (Study 1: M = 5.73, SD = 1.38; Study 3: M = 5.34, SD =1.35; scale from 1 = *not at all believable* to 7 = *very believable*; questions not assessed in Study 2).

A second potential limitation pertains to the sample. Recruitment of participants via an Internet site raises concerns regarding the lack of control over respondents, for example, whether they focus on the task or whether they take the task seriously. However, research on Amazon's Mechanical Turk as a source of data for psychological research showed that these concerns are not substantiated (Berinsky, Huber, & Lenz, 2012; Buhrmester, Kwang, & Gosling, 2011). These studies showed that the data obtained via Mturk is at least as reliable as that obtained via traditional methods, a result that is confirmed by the adequate reliabilities found in the present studies (α = .76 - .97). Furthermore, Mechanical Turk has the advantage that participants are more demographically diverse and more representative of the American population

than is the case for more traditional recruitment methods (Berinsky et al., 2012; Buhrmester et al., 2011). In order to avoid relying on a single data source, however, we utilized a different recruitment method in Study 3. In this study we made use of an existing panel of a contracted recruitment agency Qualtrics Panels. Data of Study 3 also showed adequate reliability (α = .66 - .91).

Related to the recruitment of participants via the Internet we note that our sample was familiar with the use of online technologies and were rather highly educated. Yet, importantly, reported levels of perceived personal discrimination indicated that they had experienced age discrimination in the past (Study 2: *M* = 4.14, *SD* =1.72; Study 3: *M* = 3.54, *SD* =1.92; scale from 1 = *not at all felt age discrimination* to 7 = *very much felt age discrimination;* questions not assessed in Study 1). Given the composition of our sample, we cannot directly speak to how less educated or less technically literate participants would respond regarding experiences of and responses to age discrimination. Indeed, this group may experience age discrimination differently and for different reasons (e.g., not being technically literate). For those who wish to study in more detail the nature of discrimination against lower educated or less technical older adults we would advise different sampling procedures (e.g., paper and pencil, interviews).

Notably, results of Studies 1 and 2 but not of Study 3 were supportive of subjective age bias as a buffer for well-being when facing age discrimination. In trying to explain this disparity, we reviewed differences between the studies. We found differences in the types of attributions participants made across studies. In Study 3 participants attributed their failure in the selection procedure to themselves to an equal extent, regardless of whether they had experienced discrimination or not. In Studies 1 and 2, self-attributions were lower in the discrimination conditions. Yet controlling for personal attributions did not change the nature of the results. Another difference was that compared to the other two studies, Study 3 did not include retired participants. It is plausible that retired people perceive the boundaries of the group as less permeable and thus for them a collective response may be more viable than an individual response. Indeed, Study 1 which had the highest proportion of retired participants was the only study in support of the collective response. This, as discussed earlier, speaks to the importance of considering the interplay between individual and collective responses to discrimination across different types of groups (see also Armenta, Stroebe, Scheibe, Postmes, & Van Yperen, 2017).

Conclusion

Findings of the present studies offer support for the idea that an individual response (subjective age bias) and a collective response (group identification) to age discrimination are not mutually exclusive for adults transitioning from midlife to old adulthood. However, findings suggest that feeling younger but not identifying with the group is the preferred response to discrimination in this life period. Furthermore, findings suggest that only feeling younger may boost self-esteem and increase levels of perceived health, while identifying with the group lacks these benefits. This research complements prior research by pointing to the value of considering individual and collective responses to age discrimination as complementary rather than mutually exclusive.

Chapter 3

Dynamic, not stable: Daily variations in subjective age bias and age group identification predict daily well-being in older workers

Note: An updated version of Chapter 3 will be published as
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Abstract

This work examines the hypothesis that older workers' responses to negative events at work depend, in part, on daily fluctuations of subjective age bias (SAB; how old people feel compared with their actual age) and age group identification (age GI). We tested whether SAB and age GI fluctuate over time, whether they influence attributions of negative daily work events as age-related, and thereby predict older workers' daily affect and cognitive engagement in their work. A ten-day diary study with 169 older workers (aged 50-70 years) demonstrates that there are substantial daily variations in SAB and GI. Daily fluctuations of SAB and age GI respectively predicted attributions of negative personal (e.g., forgetfulness) and social work events (e.g., social exclusion) to age. Age attributions, in turn, negatively predicted affect and daily cognitive engagement over and above event occurrence. In other words, when confronted with negative daily work events, the short-term dissociation from one's chronological age and age group (i.e., feeling younger and identifying less with other older adults) seems to benefit older workers' well-being.

Many people associate aging with negative physical and psychological changes (Sarkisian, Hays, & Mangione, 2002). In occupational settings, for example, older workers are believed to be less productive and to have a lower capacity to learn (Posthuma & Campion, 2009). These negative views about aging are also held by older adults themselves (Hummert, Garstka, Shaner, & Strahm, 1994), and likely affect the day-to-day work experiences as individuals join the group of older workers. One effect may be a change in the way in which negative events at work are interpreted (Prohaska, Keller, Leventhal, & Leventhal, 1987). For example, a momentary memory lapse can be attributed to circumstantial reasons, such as fatigue or workload, but as one becomes older can also be attributed to age. Similarly, being denied participation in professional training can be attributed to lack of economic means of the company but as one becomes older can also be attributed to age discrimination. During the transition into older age when one's identity as an older adult is not yet fully formed, these attributions may fluctuate rather than being stable: what today gets attributed to circumstantial reasons tomorrow could get attributed to age. Because aging is an aspect of the self which is internal and uncontrollable, attributing negative experiences to age is likely more harmful for well-being than attributing them to circumstantial reasons (Lachman, 1990; Levy, Ashman, & Slade, 2009; Stewart, Chipperfield, Perry, & Weiner, 2012a).

The present work examines both determinants and consequences of attributions of negative personal (e.g., forgetfulness) and social daily work events (e.g., social exclusion) to age. It does so by focusing on the role of two concepts that have proven central to the experience of old age at the individual and collective level, respectively: subjective age bias (SAB)—how old people feel compared with their actual age, and age group identification (age GI)—how much people identify with the group of older adults. SAB and age GI are typically thought of as stable and are measured and treated as individual difference variables. We suggest it is important to study fluctuations in SAB and age GI at a day-to-day level and within-persons in order to understand (1) when and how individuals make age-related attributions in work settings, and (2) how these attributions affect well-being. The current study examines these within-person relationships in older workers, a group that is receiving increasing attention in organizational research due to workforce aging (Rappaport, Bancroft, & Okum, 2003).

We aim to contribute to the understanding of how SAB and age GI—as two aspects of one's identity—drive older workers' daily well-being by extending prior research in three ways. First, we study the daily dynamics[2] between SAB, age GI, attributions of negative events to age and well-being in older workers, using the daily diary methodology. Second, we investigate *differential effects* of SAB and age GI on age attributions regarding two types of negative daily events, those that are personal in nature (e.g., a memory lapse) and those that are social, and thereby potentially discriminatory, in nature (e.g., being left out from meetings). Third, we examine the role that attributions of negative personal and

[2] Dynamic variables are herein referred to as variables that fluctuate across days and not as those constituting a feedback model with reciprocal relationships, as understood by some scholars (cf. Gelfand & Engelhart, 2012).

social work events to age play in predicting daily levels of affect and cognitive engagement, both of which represent key predictors of job performance (Beal et al., 2005; Rich, Lepine, & Crawford, 2010b). We chose to assess *daily* fluctuations because SAB has been shown to fluctuate daily (Kotter-Grühn et al., 2015). Similar fluctuations have not yet been studied regarding age GI. Yet, there is evidence that both social and personal negative events can occur on a daily basis for older adults (Neupert, Ennis, Ramsey, & Gall, 2016), and in work settings (Kuba & Scheibe, 2016a).

SAB and Age GI Fluctuate Daily

In the aging literature, SAB and age GI are largely seen as synonyms (Diehl & Wahl, 2010; Levy, 2003; Logan, Ward, & Spitze, 1992; but see Weiss & Lang, 2011). In fact, some scholars in this field refer to age identification and operationalize it as SAB (Barrett, 2003; Heckhausen & Krueger, 1993; Kaufman & Elder Jr., 2002; Westerhof & Barrett, 2005). While traditionally seen as interchangeable, SAB and age GI are starting to be understood as different aspects of one's identity that can have differential consequences for well-being (Armenta, Stroebe, Scheibe, Postmes, et al., 2017). This is in line with research within the social identity tradition, which distinguishes personal identities that include specific attributes of the individual (e.g., competence) from social or collective identities which are derived from one's memberships in social groups, and the value attached to this membership (Brewer, 1991; Tajfel, 1982; Turner et al., 1994). From this perspective, SAB can be seen to relate to an individual identity because it refers to a unique aspect of the individual, which is connected to personally felt changes. In contrast, age GI relates to a collective identity as it refers to feelings of connectedness with other group members.

At the individual level, when studying people's personal experiences of becoming older, subjective age has proven an important construct (Kotter-Grühn et al., 2015). Subjective age *bias* (SAB) refers to the gap between subjective age (how old one feels) and chronological age (how old one is). This gap can be quite considerable: adults between the ages of 58-70 years report feeling on average 6 years younger than their chronological age (Teuscher, 2009). Importantly, SAB is positively related to life satisfaction, positive affect, subjective health, self-efficacy, and self-esteem, and negatively to negative affect and mortality (Teuscher, 2009; Uotinen et al., 2005; Weiss & Lang, 2011; Westerhof & Barrett, 2005). While it has so far mainly been studied as a static construct that differs only between individuals (Westerhof et al., 2014), there is emerging evidence that SAB fluctuates daily between the ages of 60 to 96 years (Bellingtier, Neupert, & Kotter-Grühn, 2015; Kotter-Grühn et al., 2015). Day-to-day within-person variations in SAB have been shown to be substantial at 23% (Bellingtier et al., 2015). Thus, on some days aging individuals feel younger than on other days. Furthermore, some studies have successfully manipulated subjective age which demonstrates that subjective age is not stable but can be temporarily altered by situational factors (Armenta, Stroebe, Scheibe, Postmes, et al., 2017; Eibach, Mock, & Courtney, 2010; Hughes, Geraci, & De Forrest, 2013; Stephan et al., 2013).

At the collective level, the extent to which people feel connected to groups is an important predictor of health and psychological well-being (Jetten, Haslam,

Haslam, Dingle, & Jones, 2014). GI has been traditionally thought of as a stable phenomenon. However, there is reason to believe that it can fluctuate momentarily as research has manipulated GI by altering contextual factors (Ellemers et al., 1990; Jetten et al., 2001; Mummendey, Klink, & Brown, 2001). For example, GI can be modified when manipulating the status of the group and the perceived permeability of the boundaries (i.e., the perception that changing group membership and/or hierarchical status between groups is possible; Armenta, Stroebe, Scheibe, Van Yperen, et al., 2017; Ellemers et al., 1990). Likewise, perceived discrimination against one's group can alter GI (Jetten et al., 2001). Despite indirect evidence that GI can fluctuate, short-term fluctuations of GI have not yet been studied directly.

It is currently unclear how *fluctuations* of SAB and age GI affect older adults in their daily life. The present work examines the role of age attributions on daily well-being of older workers. We assume that attributing daily negative events to age can be influenced by variations in SAB and age GI. Only if SAB and GI fluctuate daily could they predict a fluctuation in daily age attributions, and daily well-being. Prior studies of short-term SAB variability focused on well-being indicators as predictors of daily SAB (Bellingtier et al., 2015; Kotter-Grühn et al., 2015). The present study extends this work by exploring a potential mechanism—age related attributions—through which daily SAB can influence daily well-being. Furthermore, a fluctuating GI implies that the self-concept derived from the group, as well as subsequent well-being advantages (Jetten et al., 2014), may be more volatile and malleable than currently assumed. Fluctuations of SAB and age GI may be particularly visible in individuals that have not yet fully formed their identity as older adults. This is the case for individuals passing from middle-age to old-age, as this moment is highly subjective and personal. Furthermore, at this stage SAB and age GI tend to be independent of each other (Armenta, Stroebe, Scheibe, Postmes, et al., 2017; Weiss & Lang, 2011).

Based on the distinction between SAB as an individual identity and of age GI as a collective identity, the present work tests the idea that SAB influences events that concern personal functioning, such as forgetfulness or fatigue, while age GI influences events that are social but also ambiguous regarding whether they concern discrimination, such as social exclusion or a lack of promotion at work. We discuss each prediction in the following paragraphs.

Attributing Negative Personal Events to Age as a Function of SAB

Aging is commonly associated with negative physical and psychological changes (Sarkisian et al., 2002). For example, forgetting important meetings at work may be a signal one is getting older. While transitioning from midlife into older age (i.e., older workers between 50 and 70 years of age), it can be particularly ambiguous whether such events are due to aging. At older ages (> 70 years) such potentially more chronic experiences may be accommodated to a new accepted identity of being old, reducing ambiguity again (Sneed & Whitbourne, 2003). This raises questions about how people who are transitioning from midlife into old age navigate through such events.

We propose that SAB is one important factor driving fluctuations in the extent to which negative personal events are attributed to age (rather than seen

as incidental). This is because while feeling older is associated with physical and psychological decline, feeling younger is associated with physical and psychological fitness (Kotter-Grühn et al., 2015; Stephan et al., 2013; Westerhof & Barrett, 2005). More specifically, we reasoned that for adults who are entering older ages, SAB may moderate the link between the occurrence of negative age-ambiguous personal events and attributions thereof to age. Specifically, on days when older adults feel younger (larger SAB), they may be less prone to attribute negative personal events to their age than on days when they feel older (smaller SAB; Hypothesis 1a). Moreover, based on the premise that SAB is an individual process connected to personally felt changes such as affect, health and strength (Keyes & Westerhof, 2012; Kotter-Grühn et al., 2015; Westerhof & Barrett, 2005) we assume that SAB influences personal events and not necessarily social events.

Attributing Negative Social Events to Age as a Function of Age GI

Social events, such as feeling excluded at work or being left out for promotion, raise different concerns in older workers: is such an event attributable to discrimination against oneself as an older person? Importantly, identification with one's group (e.g., ethnic, gender or age group) is a key moderator in the attribution of ambiguous negative outcomes to discrimination: high identifiers are more likely to attribute ambiguous events to discrimination (e.g., rejection in a selection procedure) (Eccleston & Major, 2006; Major, Quinton, & Schmader, 2003; Operario & Fiske, 2001; but see Jetten et al., 2001). This is thought to be because high identifiers, compared to low identifiers, see themselves less as an individual and more as a group member and therefore, are more aware of discriminatory cues (Operario & Fiske, 2001). This work is based on the premise that individuals differ in the extent to which they identify with the target group. But what happens if we assume that levels of GI fluctuate within persons over time? Although not yet tested, temporal changes in age GI are likely to influence attributions of negative social events to age. Specifically, we propose that on days where age GI is higher (i.e., people identify more with the group of older workers), older workers will attribute negative social events more to their age than on days where age GI is lower (Hypothesis 1b). Moreover, based on the premise that GI targets a collective identity and thus the way one is treated by others may make that identity more salient than personal events, we propose that GI influences social events and not necessarily personal events.

Consequences of Age Attributions for Daily Affect and Cognitive Engagement at Work

In general, negative work events have been shown to elicit negative emotions that could last until the end of the working day (Kuba & Scheibe, 2016b) and even the next morning (M. Wang et al., 2013). Older adults in particular may be vulnerable to the deleterious consequences of negative affect and stress (Charles, 2010). Furthermore, negative work events also impact cognitive engagement. Cognitive engagement is defined as the capacity of being fully psychologically present at the cognitive level (Kahn, 1990) and is a key indicator of job performance and job satisfaction (Rich et al., 2010a). Prior research found that daily stressors are linked to impairment of daily cognitive

performance especially in older adults (Sliwinski, Smyth, Hofer, & Stawski, 2006b). These findings are consistent with arguments that work-unrelated thoughts, in particular those that have an emotional load, direct attention off task, while subsequently redirecting attention back to the work task exhausts cognitive resources (Beal et al., 2005).

Although most negative daily events will diminish affective well-being and cognitive engagement to some extent, these debilitating effects are likely enhanced when aging workers attribute these events to their age. Unlike circumstantial events, aging is an aspect of the self which is internal and uncontrollable (Stewart et al., 2012b; Weiner, Perry, & Magnusson, 1988). When a negative event is attributed to a factor which is internal and uncontrollable, it is likely to have strong negative consequences for affect and performance (Lachman, 1990). Evidence of the potential harmful consequences of age attributions is provided by several findings: A study on older adults (aged 80 years and older) shows that attributing illness to age is associated with poorer health and greater risk of mortality after controlling for several factors like severity of the condition (Stewart et al., 2012b). Furthermore, negative self-perceptions of aging are associated with feelings of emptiness, worthlessness and hopelessness (Levy, Slade et al., 2002). Moreover, concerns that memory changes are biologically driven and inevitable, induce more task-related interference and impair working memory in older adults (Jordano & Touron, 2017). Taken together these studies suggest that age-related attributions impact well-being.

Attributions of social events to age, and potentially to discrimination, also bring about stress, uncertainty, and vigilance, all of which can lead to impairments of cognitive functioning (Cadinu, Maass, Rosabianca, & Kiesner, 2005; Inzlicht et al., 2006; Lamont, Swift, & Abrams, 2015; Major & O'Brien, 2005; Schmader & Johns, 2003; Steele, Spencer, & Aronson, 2002). Moreover, attributions to discrimination and concerns about being disadvantaged due to one's group membership have a negative impact on emotions, well-being, and health (Mendes et al., 2008; Pascoe & Smart Richman, 2009; Schmitt & Branscombe, 2002a). A study on the emotional consequences of discrimination for high versus low identifiers suggests these effects may be particularly strong for those who show high identification with their group (McCoy & Major, 2003; but see also Jetten et al., 2014). Based on the age attributions and social discrimination literature, we propose that attributing negative personal (Hypothesis 2a) and social (Hypothesis 2b) daily events to age is related to higher negative affect and lower cognitive engagement over and above event occurrence.

Taken together, we predict a moderating effect of SAB and age GI on links of negative daily event occurrence with affect and cognitive engagement via age attributions. Specifically, SAB may reduce the harmful effects of negative daily personal events by making it less likely that older workers attribute these to their age. Hence, the mediational effect of attributions to age likely varies at different levels of SAB so that on days where SAB is lower, affect and cognitive engagement will be less impaired due to fewer attributions of personal events to age (Hypothesis 3a). In contrast, age GI may enhance the harmful effects of negative daily social events by making it more likely that older workers attribute these to their age. Hence, the mediational effect of attributions to age likely varies at different levels of GI so that on days where GI is higher, affect and

cognitive engagement will be more impaired due to more attributions of social events to age (Hypothesis 3b).

Method

We used the daily diary methodology to assess daily variability of SAB and age GI and their covariation with other constructs. Although causality cannot be claimed for non-experimental studies, diary studies have several advantages. First, they are the best way to test theories about relationships as they unfold in their natural settings making them very strong in external validity (Beal, 2015; Bolger & Laurenceau, 2013). Second, diary studies comprising as few as five observations are already informative about change for a given person in a specific time interval, and—when combined with several persons—allow for a good representation of change for a typical person in the population studied (Bolger & Laurenceau, 2013, p. 2). A third advantage is that omitted and confounding variables are less of a problem when one focuses on studying how people change over time rather than on how people differ from one another (Bolger & Laurenceau, 2013, p. 31). Further advantages are the reduction of memory and method biases (for a discussion see Beal, 2015). Consequently, studying SAB and GI in conjunction with the occurrence of negative events and their attributions to age *in real-world settings* complements traditional cross-sectional studies and laboratory experiments in important ways.

Participants

The sample included 169 currently working German participants aged 50 to 70 years recruited through word of mouth and by distributing flyers[3]. Participants had a mean age of 55.12 years (SD = 4.07) and 49.7% were female. Most participants worked full-time (76.4%). Three-quart (74.6%) were employed while 16.4% were self-employed. The sample was rather highly educated: 61.1% achieved high school or higher education, and 33.8% achieved primary or lower secondary school. As incentive, participants received after study completion a summary of the main outcomes of the study and personalized feedback on their scores on SAB, age GI, number and attribution of negative events to age, and subjective well-being in comparison with other participants in the study. They also participated in a lottery for three online shopping vouchers each worth 50€.

Design and Procedure

As part of a diary design, participants were asked to complete a baseline survey and short daily surveys every afternoon after work during at least 10 work days. Participants were told that the study aim was to investigate work experiences in the second half of people's career, and therefore the questions related to their experiences on everyday work and on the effects of these experiences on their mood and thinking processes. The baseline survey included an informed consent, demographic questions, baseline measures of subjective age, age GI, attribution of negative events to age, negative affect, cognitive

[3] Ethical clearance was provided by the University of Groningen for research project number ppo-014-212.

engagement, and further measures not used in this study [4]. Moreover, participants created a personal code that they recreated at each daily measurement so that their data could be linked while ensuring anonymity of responses. We sent a web link to the daily questionnaire to the participants' email address during the 15 working days following the baseline survey; links were valid for 24 hours. In the daily questionnaires participants reported their day-specific subjective age, age GI, occurrence of daily negative personal and social events, attributions of these events to age, negative affect, cognitive engagement, and other measures not used in this study[2]. On average, participants completed 9.01 (SD = 2.44) daily questionnaires for a total of 1.523 entries. After study completion, participants were sent a link to a webpage with personalized feedback, retrievable through their personal code.

Measures[5]

Daily age GI

Identification with the group of older workers was assessed via a one-item measure of GI derived from Postmes, Haslam, and Jans (2012): "Today, I identify with the group of older workers". The scale ranged from 1 (strongly disagree) to 7 (strongly agree), with a higher score indicating higher age GI.

Daily SAB

Subjective age was assessed with the item: "Today, I feel as though I were about age _____". *Subjective age bias* was calculated by subtracting subjective age from participants' chronological age, both given in years. Higher values indicate the tendency to feel younger relative to one's chronological age. In line with earlier studies, participants reported feeling younger than their actual age on most days (72% of days across all participants), reported feeling exactly their age 21% of days, and reported feeling older on only 7% of days.

Number of personal and social events

We asked participants to indicate whether they had experienced a series of five negative personal events (i.e., "I made an error, or forgot something when completing a work task", "I was sick, had physical pain or discomfort [e.g., headache, stomachache, backache]", "I had a hard time learning new things", "I could not put an idea into action", "I had a technically related problem [e.g., PC or other work tools]") and a series of five negative social events (i.e., "I was left out from meetings with colleagues", "I was not given job-related information", "I was assigned to too many different tasks or to tasks that were not solvable", "I was treated poorly by a supervisor, colleague or costumer", "I was denied opportunities for personal and professional development") that day at work. The list of events was derived from a taxonomy of negative work events (Ohly & Schmitt, 2013) and from items used to assess age discrimination (Bayl-Smith & Griffin, 2014; James, Lovato, & Cropanzano, 1994). Every event that occurred

[4] We included a measure of perceived permeability of group boundaries in the baseline survey. Furthermore, a number of outcome measures were included in both the baseline and daily questionnaires: fatigue, self-esteem, and subjective health. Although a model that includes these outcomes offer similar results as the one presented here for negative affect and cognitive engagement, we decided not to include all these outcomes for simplicity and clarity of the model.

[5] We adopted the back-translation method for all scales that were not validated in German.

was counted as 1 and we summed up the number of personal and social events separately so that the maximum possible score of each type of event per day was 5.

Daily attributions of negative events to age

For every personal and social event endorsed for a given day, we asked participants to rate whether this event was due to their age. The scale ranged from 0 (*event did not occur* or *event was not at all related to my age*), to 4 (*event was very much related to my age*). We summed up the scores so that a higher score indicates a stronger attribution of events to age, either personal or social.

Negative affect

We assessed negative affect by asking participants to rate the extent to which they had felt *angry, irritable, hostile, sad, blue*, *downhearted* that day while at work, from 1(*not at all*) to 5 (*extremely*). The measure was derived from the PANAS-X scale (Watson & Clark, 1994). We aggregated items so that higher scores indicate higher negative affect. Reliability of the scale for the within-person level was adequate (ω = .74) [6].

Daily cognitive engagement

We assessed cognitive engagement by asking participants to rate to which extent they had felt *attentive, absorbed, uninvolved*, *detached,* and *distracted* that day while at work, from 1(*not at all*) to 5 (*extremely*). The measure was developed based on Kahn (1990) who assessed cognitive engagement qualitatively using these five words in his interviews. We reverse-coded the last three items and then aggregated items so that higher scores indicate higher cognitive engagement. Reliability for the within-person level was relatively low (ω = .52).

Analytic Approach

Given that our data consisted of daily reports that were nested within persons, we used random-coefficient multilevel modeling (Muthén, Muthén, & Asparouhov, 2015) to test hypotheses. Random-coefficient multilevel modeling accounts for the fact that both intercepts and slopes may vary across individuals (e.g., the relationship between event occurrence and age attributions may differ from one older worker to the next). We tested all hypotheses simultaneously with multilevel path analysis, via a multilevel structural equation modeling (MSEM) approach using Mplus 7 (Muthén & Muthén, 2015). This enabled us to estimate Hypotheses 1 to 3 at the within-person level at the same time. We used Bayesian estimation as is recommended for MSEM (Hox, Moerbeek, Kluytmans, & van de Schoot, 2014).

Prior to running the model, we decomposed the predictor variables (i.e., occurrence of personal/social events, SAB, and age GI) into their within-person level and between-person level counterparts, also known as person-mean

[6] Composite reliability or coefficient omega (ω) uses multilevel confirmatory factor analysis to measure the reliability of multi-item scales to assess within-person change and is the preferred method for estimating multilevel reliability (Bolger & Laurenceau, 2013; Geldhof, Preacher, & Zyphur, 2014). It represents the ratio of a scale's estimated true score variance relative to its total variance (Bolger & Laurenceau, 2013, Equation 7.9, p. 138).

centering. We further grand-mean centered the between-level variables (i.e., centered the variables around its mean). This methodology has several advantages: (1) it prevents a confounding of levels from occurring (Bolger & Laurenceau, 2013); (2) it treats both levels of a given variable as different variables that are not necessarily related; (3) it enables one to define the interaction effects in advance and enter them as predictors in the model. To decompose the predictor variables we calculated each participant's mean on each of the predictor variable and subtracted it from the participant's raw score on the predictor variable. We then conducted the multilevel analysis with the within-person deviations as predictors. Since we did not expect that time had an effect on our hypotheses we controlled for it at the within-person level (however, time did not have an effect on any variable except on cognitive engagement, ß= 0.006, p =0.020). We controlled for age and gender at the between-person level (we only found an effect of gender on cognitive engagement, with lower engagement scores for men compared to women; ß= -0.15, p =0.020). In line with conventions, we report unstandardized coefficients from the MSEM.

Results

Preliminary Analyses

Means, standard deviations, intraclass correlations, reliabilities, and correlations between within-person level and between-person level variables are shown in Table 3.1. Intraclass-correlation coefficients (ICC) varied between 14% and 74%, indicating that a significant proportion of variance (between 26% and 86%) was located at the within-person level. The average number of negative personal events per day was 1 (*SD*=1.07). Personal events occurred on 58% of days. The average number of personal events on these days was 1.7 (*SD*=0.87). The average ratings of attribution of personal events to age was 0.56 (*SD*=1.09), with personal events or attributions of these events to age on 29% of days. The average rating of attribution of personal events to age on the days when personal events occurred was 0.93 (*SD*=1.3). The average number of social events per day was 0.38 (*SD*=0.76). Social events occurred on 24.9% of days. The average number of social events on these days was 1.5 (*SD*=1.78). The average ratings of attribution of social events to age was 0.08 (*SD*=0.40), with social events or attributions of these events to age on 5.3% of days. The average rating of attribution of social events to age on the days when social events occurred was 0.32 (*SD*=0.74). These statistics suggest that age attributions are relatively rare in daily work life, especially with regard to social, potentially discriminatory, events. Nevertheless, due to the large number of daily samples (N = 1523), our data included 884 days with personal age-related events and 379 days with social age-related events.

Interestingly, we found a negative correlation between age and number of negative events (both personal r = -.18, p = .009, and social, r = -.26, p < .001) which indicates that the older these working participants were, the fewer negative events they reported across all study days. Surprisingly, we also found a negative correlation between age and attributions of social events to age, r = -.17, p = .019, indicating that the older the participant the less they attributed negative social events to age. Age and negative affect showed a negative

correlation, r = -.18, p = .01, indicating that the older the participant the less they reported negative affect. Age and cognitive engagement did not correlate significantly, r = -.02, p = .719. We will return to these findings in the discussion. Finally, age GI and SAB showed moderate correlations both at the day-level, r = -.24, p < .001, and at the person-level, r = -.33, p < .001; which supports their separate consideration in our research model.

The Moderational Role of SAB: From Occurrence of Negative Events to Negative Affect and Cognitive Engagement

All parameter estimates and their corresponding standard deviations and confidence intervals are shown in Table 3.2. Figure 3.1 gives an overview of the main results depicted in the model. Results of the within-person MSEM model show that the more negative personal events occurred on a given day the more attributions of these events to age were made, β_1 = 0.47, p < .001. Importantly, in line with Hypothesis 1a, the strength of this relationship was moderated by daily SAB (β_{15} = -0.02, p = .020). Thus, on days where SAB was lower (i.e., people felt older) people reported a stronger link between occurrence of negative personal events and attributions of these events to age than on days where SAB was higher (i.e., they felt younger). To illustrate, Figure 3.2 shows the relationship between attributions of personal events to age and occurrence of personal events at low (20th percentile) and high (80th percentile) levels of daily SAB. At low levels of daily SAB, the slope was 0.51, z =16.67, p < .001. At high levels of daily SAB, the slope was 0.44, z =16.35, p < .001.

Attributions of negative personal events to age in turn related to higher negative affect, β_{11} = 0.03, p = .010, and lower cognitive engagement, β_{16} = -0.07, p < .001. Moreover, in support of Hypothesis 2a, attributions to age mediated the relationship between occurrence of negative personal events and negative affect (indirect effect: β_{19} = 0.01, p = .010) and cognitive engagement (indirect effect: β_{20} = -0.03, p < .001). Furthermore, conform Hypothesis 3a, the indirect effect of personal events on negative affect through attributions to age depended on the level of daily SAB, β_{23} = -0.001, p = .030, as did the indirect effect of personal events on cognitive engagement through attributions to age, β_{24} = 0.002, p = .020.

Importantly, SAB did not moderate the relationship between occurrence of *social* events and attributions of these events to age, β_{17} = 0.01, p = .180. In other words, daily SAB related to daily cognitive engagement via attributions of personal events to age, but not via attributions of social events to age.

Table 3.1
Means, Standard Deviations, ICCs, Reliabilities (Diagonal), and Intercorrelations of Day-Level Variables (Below Diagonal) and Person-Level Variables (Above Diagonal)

	Variable	*M*	*SD*	ICC	1	2	3	4	5	6	7	8	9	10
Day-level (Level 1)														
1	Number of personal events	1.00	1.07	.45	--	.68***	-.18*	.07	.75***	.60***	.64***	-.44***	-.18**	-.03
2	Number of social events	0.38	.76	.39	.02	--	-.14†	.01	.41***	.71***	.65***	-.29***	-.26***	-.05
3	SAB	5.10	5.92	.67	-.13***	-.10**	--	-.33***	-.27***	-.12	-.10	-.13	.17*	.07
4	Age GI	3.80	1.85	.74	.12**	.08*	-.24***	--	.18**	.11	.02	-.02	.30***	.01
5	Personal attributions to age	0.56	1.09	.47	.49***	.07†	-.21***	.14***	--	.69***	.67***	-.33***	-.08	-.01
6	Social attributions to age	0.08	0.40	.14	.03	.39***	-.07	.08*	.08	--	.73***	-.37***	-.17*	-.07
7	Negative affect	1.22	0.40	.40	.15***	.27***	-.22***	.15***	.15***	.18**	(.74/.95)	-.48***	-.18*	-.05
8	Cognitive engagement	4.23	0.56	.56	-.14***	-.09**	.23***	-.08**	-.19***	-.11*	-.20***	(.52/.88)	-.02	-.17*
Person-level (Level 2)														
9	Age	55.12	4.06	--									--	.10
10	Gender[a]	0.50	0.5	--										--

Note. Level 1 $N = 1523$; Level 2 $N = 169$. SAB = Subjective Age Bias. Age GI = Identification with the group of older workers. ICC= Proportion of variance at the person-level. Reliability estimates (ω; Bolger & Laurenceau, 2013 p. 138) are shown in parentheses along the diagonal; the first value refers to the day-level (Level 1), the second refers to the person-level (Level 2). [a] 0 = female, 1 = male. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3.2
Bayesian Unstandardized Coefficients of the MSEM Model for Testing Main, Moderation, and Mediation Within-Person Effects on Outcome Variables

Effect type	Coefficient	*SD*	95% *CI*
Slopes			
β_1: Personal events → Personal attributions	0.47***	0.03	[0.42, 0.52]
β_2: Personal events → Negative affect	0.04***	0.01	[0.02, 0.06]
β_3: Personal events → Cognitive engagement	-0.03*	0.02	[-0.06, -0.00]
β_4: Social events → Social attributions	0.24***	0.02	[0.20, 0.27]
β_5: Social events → Negative affect	0.12***	0.02	[0.09, 0.15]
β_6: Social events → Cognitive engagement	-0.02†	0.02	[-0.06, 0.00]
β_7: SAB → Personal attributions	-0.03***	0.01	[-0.04, -0.02]
β_8: SAB→ Social attributions	-0.00	0.00	[-0.01, 0.00]
β_9: Age GI → Personal attributions	0.04*	0.02	[0.00, 0.08]
β_{10}: Age GI → Social attributions	0.01	0.01	[-0.01, 0.03]
β_{11}: Personal attributions→Negative affect	0.03*	0.01	[0.01, 0.05]
β_{12}: Personal attributions→Cognitive engagement	-0.07***	0.01	[-0.10, -0.05]
β_{13}: Social attributions → Negative affect	0.07*	0.03	[0.00, 0.11]
β_{14}: Social attributions → Cognitive engagement	-0.08*	0.03	[-0.13, -0.01]
Moderation paths			
β_{15}: Personal events x SAB→ Personal attributions	-0.02*	0.01	[-0.04, -0.01]
β_{16}: Personal events x Age GI→ Personal attributions	0.01	0.02	[-0.04, 0.06]
β_{17}: Social events x SAB→ Social attributions	0.01	0.00	[-0.00, 0.01]
β_{18}: Social events x Age GI→ Social attributions	0.09***	0.02	[0.06, 0.11]

Indirect effects (mediation paths)			
β_{19}: Personal events → Personal attributions →Negative affect	0.01*	0.01	[0.00, 0.03]
β_{20}: Personal events → Personal attributions →Cognitive engagement	-0.03***	0.01	[-0.05, -0.02]
β_{21}: Social events → Social attributions →Negative affect	0.02*	0.01	[0.00, 0.03]
β_{22}: Social events → Social attributions →Cognitive engagement	-0.02*	0.01	[-0.03, -0.00]
Indirect effects (moderated mediation)			
β_{23}: Personal events x SAB→ Personal attributions →Negative affect	-0.00*	0.00	[-0.001, 0.000]
β_{24}: Personal events x SAB→ Personal attributions→Cognitive engagement	0.00*	0.00	[0.000, 0.003]
β_{25}: Personal events x Age GI→ Personal attributions →Negative affect	0.00	0.00	[-0.001, 0.002]
β_{26}: Personal events x Age GI→ Personal attributions →Cognitive engagement	-0.00	0.00	[-0.004, 0.002]
β_{27}: Social events x SAB→ Social attributions →Negative affect	0.00	0.00	[0.000, 0.001]
β_{28}: Social events x SAB→ Social attributions →Cognitive engagement	0.00	0.00	[-0.002, 0.000]
β_{29}: Social events x Age GI→ Social attributions →Negative affect	0.01*	0.00	[0.000, 0.011]
β_{30}: Social events x Age GI→ Social attributions →Cognitive engagement	-0.01*	0.00	[-0.013, -0.001]
Residual variances			
Social attributions	0.03***	0.00	[0.02, 0.04]
Personal attributions	0.62***	0.08	[0.49, 0.81]
Negative affect	0.07***	0.01	[0.05, 0.09]
Cognitive engagement	0.18***	0.02	[0.14, 0.23]

Note. Level 1 $N = 1523$; Level 2 $N = 169$. Personal attributions = Attributions of negative personal events to age; Social attributions = Attributions of negative social events to age; SAB = Subjective Age Bias; Age GI = Identification with the group of older workers; CI = confidence interval. Day effects are controlled for in the analyses. † $p < .10$; * $p < .05$; *** $p < .001$.

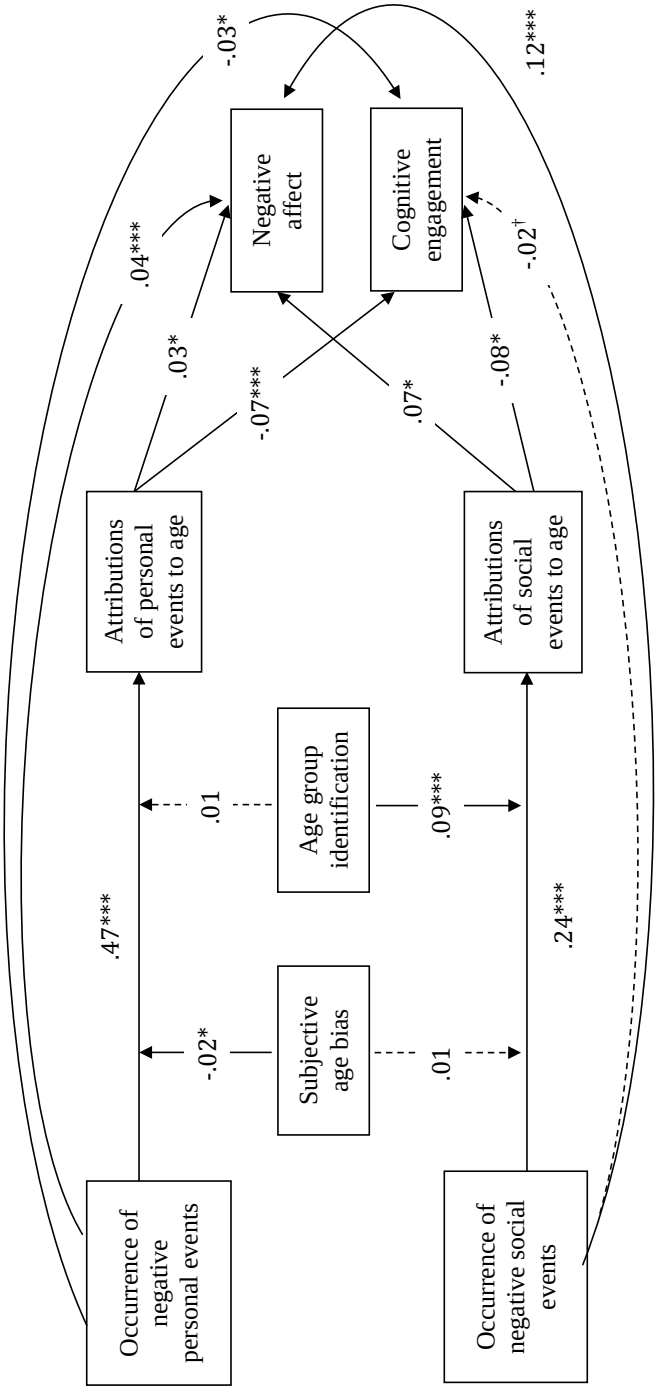

Figure 3.1. Multilevel structural equation model with unstandardized coefficient estimates for the within-person level. Dotted lines represent non-significant relationships at the .05 level. † $p < .10$; * $p < .05$; *** $p < .001$.

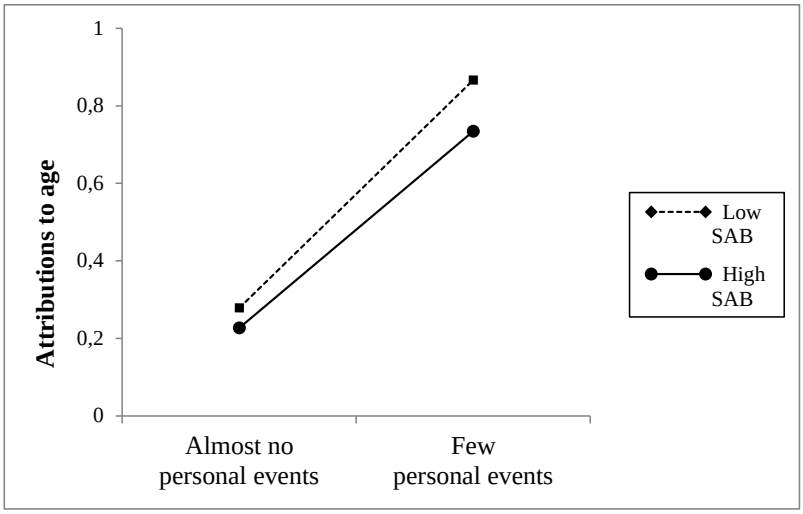

Figure 3.2. Interaction effect of subjective age bias (SAB) on the relationship between occurrence of negative personal events and attributions of these events to age for the within-person level. Low SAB/almost no personal events and high SAB/few personal events refer to the 20th and 80th percentile of the variable respectively.

The Moderational Role of Age GI: From Occurrence of Negative Events to Negative Affect and Cognitive Engagement

Results of the within-person MSEM model show that the more negative social events occurred on a given day the more attributions of these events to age were made, $ß_4 = .24$, $p < .001$. Importantly, in line with Hypothesis 1b, the strength of this relationship was moderated by daily age GI ($ß_{18} = 0.09$, $p < .001$). Thus, on days where age GI was higher (i.e., people identified more with the group of older workers) people reported a stronger link between occurrence of negative social events and attributions of these events to age than on days where age GI was lower (i.e., people identified less with the group of older workers). To illustrate, Figure 3.3 shows the relationship between attributions of social events to age and occurrence of social events at low (20^{th} percentile) and high (80^{th} percentile) levels of daily age GI. At low levels of daily age GI, the slope was 0.19, $z = 11.33$, $p < .001$. At high levels of daily age GI, the slope was 0.28, $z = 15.27$, $p < .001$.

Attributions of negative social events to age, in turn, positively related to negative affect, $ß_{13} = 0.07$, $p = .030$, and negatively to cognitive engagement, $ß_{14} = -0.08$, $p = .020$. Moreover, in support of Hypothesis 2b, attributions to age mediated the relationship between occurrence of negative social events and negative affect (indirect effect: $ß_{21} = 0.02$, $p = .030$), and cognitive engagement (indirect effect: $ß_{22} = -0.02$, $p = .020$). Furthermore, as stated in Hypothesis 3b, the indirect effect of social events on negative affect through attributions to age depended on the level of daily age GI, $ß_{29} = 0.005$, $p = .030$. Similarly, the indirect effect of social events on cognitive engagement through attributions to age depended on the level of daily age GI, $ß_{30} = -0.006$, $p = .020$.

Importantly, age GI did not moderate the relationship between occurrence of *personal* events and attributions of these events to age, $\beta_{16} = 0.01$, $p = .590$. In other words, daily age GI related to daily negative affect and cognitive engagement via attributions of social events to age, but not via attributions of personal events to age.

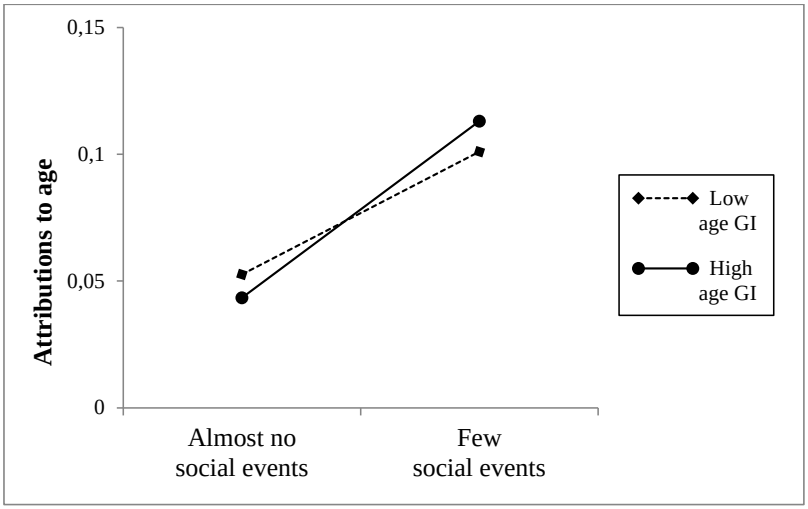

Figure 3.3. Interaction effect of age group identification (age GI) on the relationship between occurrence of negative social events and attributions of these events to age for the within-person level. Low age GI/almost no social events and high age GI/few social events refer to the 20th and 80th percentile of the variable respectively.

Discussion

The transition to older age is often associated with cognitive, physical, and status loss as well as the uncertainty of whether events, such as forgetting that meeting at work, can be attributed to age. The present work focused on the flexibility inherent in this transition to older age on a daily basis: When do older workers attribute personal (e.g., forgetting) and social (e.g., not being invited to a meeting) events to age? And how do these attributions affect levels of well-being? In understanding the flexible nature of these processes, we examined how fluctuations in older age identity—how old one feels personally (SAB) and the extent to which one feels connected to the group of older adults (age GI)—would affect these personal and social attributions respectively.

The results provided evidence for daily variability in SAB and age GI. Indeed, a significant proportion of variance in SAB (33%) and age GI (26%) was located at the within-person level. These daily fluctuations of SAB and age GI predicted subsequent age-related attributions, respectively predicting attributions of negative personal (e.g., forgetfulness) and social (e.g., ill-treatment) daily work events to age. Notably, such attributions to social events potentially contain an element of discrimination: the negative behavior towards a person (e.g. exclusion, lack of promotion). Both personal and social attributions to

age, in turn, negatively predicted affect and cognitive engagement in older workers.

The present research approach of considering *fluctuations in SAB and GI* complements a long tradition of studying SAB and GI as stable individual properties. To our knowledge this is the first empirical study to focus on GI as a fluctuating identity. It implies that the self-concept derived from the group, as well as the associated well-being advantages (Jetten et al., 2014), intergroup attitudes (e.g., prejudice) and behaviors (e.g., discrimination; Tajfel, 1982) may also be malleable in the very short term. In addition, our results contribute to emerging research suggesting that the apparent stability of SAB may be veiled by daily variations thereof (Bellingtier et al., 2015; Kotter-Grühn et al., 2015). Whereas previous work has focused on SAB as an outcome of daily negative stressors (Bellingtier et al., 2015), the present study reveals that fluctuations in SAB play an important role in interpreting the nature of daily stressors: are they age-related or not? In sum, given the considerable within-person variance of these constructs, our work suggests that an exclusive between-person approach to SAB and to GI may be incomplete.

The present work has several theoretical and practical implications. At the theoretical level, it suggests that SAB and age GI should be considered as two separate concepts. Indeed, it is not the case that someone who feels very connected to older people is more likely to attribute personal events, such as forgetting something, to his or her age – yet he or she is more likely to attribute social events, such as being excluded from a meeting, to age. Conversely, someone who feels older is not more likely to attribute social events to age, but is more likely to think that forgetting a meeting is due to his/her age. In other words, one would not consider SAB and GI as two sides of the same coin (cf. Heckhausen & Krueger, 1993; Kaufman & Elder Jr., 2002; Westerhof & Barrett, 2005) but rather study the separate implications of these concepts. This is befitting of the social identity tradition that distinguishes individual and collective identities (Brewer, 1991; Tajfel, 1982; Turner et al., 1994). In line with this reasoning, SAB may be seen as referring to aspects of a personal identity and subsequent interpretation of personal events whereas GI refers to one's collective identity and subsequent interpretations of social events.

This has further interesting implications. Individual and collective identities are considered central to explaining individuals' behavior in intergroup relations as they are proposed to bring about different responses when facing intergroup conflict (Tajfel, 1982; Tajfel & Turner, 1979). For adults who transition from midlife to older ages this could mean that they have additional coping mechanisms to fight stigma. For example, older workers could work towards looking and feeling young (an individual type of strategy) and at the same time file a complaint after an incident of perceived age discrimination to ensure a better treatment for older workers in the future (a collective type of strategy). This is in line with emerging research advocating that these two strategies may be potentially reinforcing rather than mutually exclusive (Becker et al., 2015).

Furthermore, amid an ongoing discussion about the effects of GI with a stigmatized group for well-being (Branscombe et al., 1999; McCoy & Major, 2003) we found evidence of a path by which identifying with the group of older workers

may indirectly have a negative impact on well-being because it means that negative social events can be attributed to one's group membership. Although it has been argued at the between-person level that such attributions can be self-protective (albeit under certain conditions, e.g., when discrimination is not considered pervasive; McCoy & Major, 2003; Stroebe et al., 2011), at the within-person level we find that attributions of social events to age negatively impact affect and cognitive engagement. Additionally one could argue that although the immediate consequences for well-being may be negative, down the line the high identifiers may be better prepared to fight stigma than low identifiers by developing coping mechanisms at an early stage (see also K. Wang, Stroebe, & Dovidio, 2012).

A similar case can be raised for people who feel older. Our results showed that at the within-person level feeling older may indirectly have a negative impact on well-being because it means that negative personal events can be attributed to one's age. At the long-term, however, one may wonder whether feeling younger than one's age is beneficial for people's well-being. Namely, it could prevent older adults from adjusting to their aging by accommodating a concrete self-definition as an older person. Indeed, research shows that a balance between accommodating a new identity (i.e., allowing new experiences to shape one's identity) and assimilating an existent identity (i.e., ignoring discrepant experiences to maintain the current identity) is the most adaptive identity process (Sneed & Whitbourne, 2003).

At the practical level, our findings substantiate the hypothesis that daily negative work events and age attributions have a negative impact on affect and cognitive engagement, both of which are important predictors of job performance (Beal et al., 2005; Rich et al., 2010a). It is therefore important for organizations to know that negative effects on job performance and well-being of their older employees could be partly diminished by reinforcing an atmosphere which promotes a positive view towards aging. At the same time it is important for individuals to be aware that how old they feel and how much they identify with the group of older workers on a given day can affect their daily age attributions. This may compel them to reflect on the objectivity of such age attributions, which is especially important when the cause of attributing negative experiences to age is biased such as an automatic association between "old" and "bad" (Prohaska et al., 1987; Stewart et al., 2012b). After all, research has shown that age per se is not the principal cause of illness and that most of the negative stereotypes of older workers are inaccurate (Ng & Feldman, 2012; Stewart et al., 2012b). Our own results showed a non-significant correlation between age and cognitive engagement $r = -.02$, $p = .719$, which contradicts the stereotype of reduced performance with age.

Limitations and Future Directions

A limitation of the current study is that its design does not allow for claims of causality. A closer approximation to causal claims from a daily diary methodology would require that the potential predictor and outcome are measured closer in time to be able to explore order and time delay between them, and to avoid potential confounding variables. However, this may diminish the potential for fluctuations in SAB and age GI and increase the chance that

participants become habituated to questions and responses. For this reason, and guided by previous research finding fluctuations in SAB at a daily level (Bellingtier et al., 2015; Kotter-Grühn et al., 2015), we assessed these concepts at the daily level rather than more frequently. This means that we cannot be sure that age attributions precede well-being outcomes based on the present results. However, evidence—which includes experimental studies—is compelling regarding the causal claims of age attributions affecting well-being (e.g., Lamont et al., 2015; Stewart et al., 2012). This study complements prior research in this respect with the advantage that it offers good external validity (Beal, 2015).

Furthermore, we note that participants from our sample experienced few days with negative social events (about one in four days) of which very few were attributed to age (about one in five days with social events). We found this an interesting outcome. Does this mean that social events are less noticed and even less attributed to age than are personal events? Or did our sample experience fewer negative social than personal events at work and attribute them less to age perhaps because they were highly educated or representative of a less youth-oriented culture (i.e., Germany)? To analyze this phenomenon, future research could include a sample from an environment where instances of age discrimination are potentially more frequent, or could compare environments that differ in valuations of older ages. For instance, cross-cultural comparisons could allow for interesting conclusions regarding the nature and protective value of SAB and age GI if their well-being effects replicate in age discriminatory cultures but not in more age-egalitarian cultures. Indeed, a comparison study between Germany and the United States showed that feeling younger has more well-being advantages in a more youth-oriented culture (i.e., the United States; Westerhof & Barrett, 2005).

Our work focused on the role of fluctuations in SAB and age GI in attributing daily events at work to age. This is an important step to understanding what shapes age-related work attributions. Yet we note that it raises the question of what determines such fluctuations in SAB and age GI at the daily level. At present little is known about potential causes of daily variability in SAB and GI. This is an important avenue for future research. On the one hand, SAB is hypothesized to change along with fluctuations in health and daily stressors (Bellingtier et al., 2015; Kotter-Grühn et al., 2015). However, no research so far has found empirical evidence of this causal link. On the other hand, experimental research at the between-person level suggests various possible determinants of GI, such as the perceived permeability of group boundaries, and the stability and legitimacy of the group's status position (Ellemers et al., 1990; Ellemers, Wilke, & Van Knippenberg, 1993). However, these contextual factors are unlikely to fluctuate daily and the underlying question of what increases group identification in natural settings is yet unanswered. Future research can profit from investigating whether the perceptions of such contextual factors can fluctuate in the short-term and if they cause people's GI daily variations in natural settings.

Another interesting focus for future research would be to study whether between-person effects of SAB and age GI replicate for the within-person level. For example, between-person research has shown that grip strength is increased when people is induced to feel younger (Stephan et al., 2013). A diary study can

further investigate whether SAB predicts physical functioning across days. Likewise, an important outcome of GI is that it induces collective action (Van Zomeren et al., 2008). In light of this, one may wonder if on days when GI is high rather than low, the same individual would be more inclined to participate in collective action practices such as public demonstrations.

Conclusion

Overall, our findings suggest that feeling younger and disidentifying with the group of older workers offer advantages for older workers' short-term well-being: On days when older workers felt younger and identified less with the group of older workers they attributed negative age-ambiguous events less to their age than on days when they felt older and identified more with the group of older workers. Age attributions were in turn coupled with higher negative affect and reduced cognitive engagement. Findings further contribute to the aging and intergroup relations literatures by showing that SAB and age GI have considerable variability at the day level and differentially moderate age attributions of different types of events (personal versus social). This underscores the benefit to study SAB and age GI separately to fully understand the well-being consequences of individual and collective aspects of older workers' identity.

Chapter 4

Permeability of group boundaries: Development of the concept and a scale

Note: Chapter 4 was published as
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Abstract

The perceived possibility of movement between groups, referred to as permeability of group boundaries, is considered a key factor in explaining intergroup relations. However, so far permeability has been conceptualized in different ways and there exists no validated measure. Integrating different conceptualizations, we developed a scale distinguishing *membership* permeability (e.g., a person changing from one sport team to another) versus *status* permeability (e.g., a person acquiring a higher social status). Scale validation occurred across samples representing five lower status groups (older adults, women, obese, lower educated, ethnic minorities). Our scale was related to central indicators of intergroup relations such as self-reported intergroup attitudes (e.g., identification) and endorsement of behavioral strategies (individual mobility, collective action). Moreover, it distinguished permeability characteristics of different types of social groups. The scale provides a novel theoretical conceptualization of permeability and can be used to examine levels and correlates of permeability perceptions across social groups.

Memberships in social groups such as families, sport teams, ethnic groups, or age groups give people a sense of meaning and belonging and often provide access to important resources (S. A. Haslam et al., 2009). Group memberships are also flexible as people may wish to change groups or get access to an outgroup's resources, for example, when the own group is in a disadvantaged position. This can occur by taking on a different group membership, such as when a person changes employers or sports teams. In such cases, boundaries between groups are permeable. In other cases, it may be impossible to change group membership (e.g., for most in the case of gender), but group members can advance hierarchically, for example when a woman rises in the hierarchy of a male-dominated organization. Here group boundaries are also permeable as the group's resources can be accessed by outgroup members. This perception that group boundaries are permeable is an important determinant of ingroup attitudes and intergroup behavior (Tajfel, 1975). For example, when group boundaries are perceived as permeable, this can lower ingroup identification and increase intentions to join an outgroup (Ellemers et al., 1990).

Despite the undisputed theoretical importance of permeability, researchers in the area of intergroup relations have not taken into account potential dimensions of permeability or systematic differences in permeability perceptions between social groups. In this paper, we distinguish two types of permeability: membership (i.e., changing groups) and status permeability (i.e., accessing resources of another group) that have, albeit implicitly, been central to the concept of permeability. Indeed, both have been used separately to operationalize permeability (cf. Hersby, Ryan, & Jetten, 2009; Wright, Taylor, & Moghaddam, 1990), yet without theoretical explication of their differences.

In addition, we stress the importance of assessing different types of constraints people may experience when assessing the *perceived* possibility of permeating group boundaries. These can be constraints imposed on one's ingroup (can my group permeate another group), on oneself (can I permeate another group), as well as whether or not changing groups *matches one's own values*. This is in line with Ellemers' (1993) definition of permeability as "an objective impossibility of changing group affiliations, *(that)* may also only be experienced as such because values that are central to their self-concept prevent people from freely moving from one group to another" (p. 32).

The goal of the current study was threefold: first, we sought to provide a conceptualization of permeability which differentiates between membership and status permeability. Second, we aimed to develop a scale that allows a comprehensive study of permeability perceptions across multiple social groups. Third, we sought to validate and apply the scale by examining mean levels and theoretical correlates of permeability perceptions across different types of social groups. Although applicable to any group, the concept of permeability is particularly relevant when studying attitudes and behaviors of group members who perceive that their group has a higher or a lower status than an outgroup. In the current study, we chose to focus on permeability perceptions of low (rather than high) status group members. Our choice was based on the observation that low status groups have received the bulk of research attention, with relatively robust findings on the role of permeability. Focusing on low status groups therefore allowed us to connect with the existing literature and to advance more

sound predictions regarding construct and criterion validity. Note however that our scale was constructed in a manner that it can be applied to any social group. In the following, we provide a theoretical background of permeability by discussing its uses and conceptualizations in the extant literature. We then advance an integrated definition of permeability and present the development of our new scale and its application.

Importance of Permeability: Predicting Intergroup Attitudes and Behavior

Tajfel (1975) was among the first to propose that permeability is essential to understanding the types of actions group members would take in response to their low status group membership. This became part of Social Identity Theory (SIT). According to SIT and in later theorizing, permeability constitutes one of the socio-structural characteristics that determine people's *attitudes* towards their own group (e.g., identification), towards outgroup members (e.g., derogation), and people's *behaviors* towards intergroup inequality (e.g., strategies to resolve or to maintain status quo).

Indeed, low levels of permeability perceptions are associated with higher levels of *identification* with the own group (Ellemers et al., 1988; Ellemers et al., 1990; but see Jackson, Sullivan, Harnish, & Hodge, 1996). Low status group members who perceive their group as less permeable are more focused on positive aspects of their own group and more likely to consider support of other ingroup members as a strategy for status enhancement (Hersby et al., 2009). High status group members who perceive their group as more permeable are more likely to derogate the low status group (i.e., showing prejudice) as a strategy to maintain the threatened status quo (Johnson et al., 2005).

Importantly, permeability perceptions also determine the *behaviors* of low status group members. Specifically, SIT distinguishes two types of responses to intergroup inequality by low status group members, which are influenced by permeability: (1) *individual strategies*, aimed at improving the situation of the single individual; and (2) *collective strategies*, aimed at improving the situation of the group as a whole (Tajfel & Turner, 1979). When boundaries between groups seem permeable, individual strategies, particularly *individual mobility,* are preferred. In this case, members of low status groups seek to join the high status group. When the boundaries of the group are perceived as impermeable and individual advancement is not possible, collective strategies would be employed (Tajfel, 1975; Tajfel & Turner, 1979). Indeed, perceptions of impermeability are consistently associated with greater endorsement of collective (Jackson et al., 1996; Mummendey, Kessler, Klink, & Mielke, 1999) and lesser endorsement of individual strategies (Ellemers et al., 1990; Wright et al., 1990).

Importance of Permeability: Distinguishing Different Types of Social Groups

Although not a focus point of SIT, the concept of permeability could be used to assess differences between social groups. Theories in the areas of essentialism and group processes propose that social groups differ in features related to permeability. For example, whether groups have clear-cut (i.e., you're a member or not), or fuzzy boundaries, or how easy it is to change category membership (Haslam, Rothschild, & Ernst, 2000). Similarly, Lickel and

colleagues (2000) introduced the concept of group entitativity, distinguishing *social categories* that are characterized by low permeability (e.g., gender, ethnic groups, age groups), from *transitory groups*, characterized by high permeability (e.g., people waiting at a bus stop). Although there is clearly some conceptual overlap between essentialist and permeability approaches, we also see complementarity. Whereas essentialist approaches stress the collective perception of groups, previous conceptualizations of permeability stress the individual perspective. Yet, in line with essentialist approaches, a measure of permeability should also be able to capture differences between social groups regarding levels of permeability. This is an aspect that previous conceptualizations of permeability, which we turn to next, have so far neglected.

Previous Conceptualization

Two streams of literature can be identified that conceptualize permeability quite differently, mapping on to our distinction between membership and status permeability. The one, laboratory based, *manipulates* permeability either by creating artificial groups based on the minimal group paradigm (Ellemers et al., 1990; Jackson et al., 1996, Experiment 1; Wright et al., 1990) or by giving information regarding the transience of the group (Jackson et al., 1996, Experiment 2). These studies conceptualize permeability as the possibility to become a *member of* another group. For example, participants are told that they are placed into a group and that in the course of the experiment the composition of groups can change (permeable condition) or cannot change (impermeable condition; Ellemers et al., 1988).

In another stream of literature, field studies *measure*, rather than manipulate, permeability perceptions of groups, as perceived by members of existent social categories. Such measures typically rely on the use of few items developed for the study in question, without determining the validity and reliability of the measure. These studies conceptualize permeability as the possibility of individual advancement and individually attaining a *higher status* (Hersby et al., 2009; Levin, Sidanius, Rabinowitz, Federico, & Rabinowitz, 1998; Van Laar, Sidanius, & Levin, 2008). Tajfel's (1975) definition of permeability or social mobility more closely reflects such status advancement: "… an individual's perception that he can improve his position in a social situation, or more generally, move from one position to another, as an individual" (p. 104). In this case, the status hierarchy is permeable or impermeable, without group members necessarily changing group membership. For example, Hersby and colleagues (2009) measured perceptions of permeability of professional women as their perceived possibility of obtaining a higher status within the organization (but see Mummendey et al., 1999 for an example of permeability measured as being physically perceived as a member of the higher status group).

So far, these two streams of literature have not been integrated. Findings on artificial groups created in laboratory settings are assumed to generalize to real-world social groups, as studied in field research. However, given that laboratory and field studies operationalize and conceptualize permeability differently, it remains unclear whether this assumption is valid. There are both convergent and divergent findings. One convergent finding is that both in experimental and field studies, higher levels of permeability are consistently

associated with lower levels of collective action (e.g., Mummendey et al., 1999; Wright et al., 1990). A divergent finding is that in experimental groups, higher perceptions of permeability are related to higher levels of individual mobility (e.g., Lalonde & Silverman, 1994), whereas in field studies there is evidence of both negative and positive associations (e.g., Thai, Barlow, & Hornsey, 2013; Mummendey et al., 1999).

Towards a Definition and Operationalization of Permeability

Based on the above mentioned theorizing and operationalizations of permeability, we define permeability of group boundaries as *the perceived objective or subjective possibility of changing group membership, and/or of changing hierarchical status*. We thus incorporate the possibility of changing *group membership*, typically manipulated in experiments, and the possibility of changing *hierarchical status,* typically measured in field studies. Status permeability can involve accessing activities, power, rank and/or resources that define the status of the outgroup and are usually denied to the ingroup.

Importantly, this definition includes not only permeability in the objective sense, but also, in line with SIT, the subjective component of permeability (Ellemers, 1993; Tajfel, 1974). Furthermore, it includes both permeability at the individual level (one can permeate the boundaries) and at the collective level (the collective can permeate the boundaries). Accordingly, within our two central dimensions of permeability (membership, status), we originally defined 5 sub-dimensions based on the different constraints that group members encounter when wanting to pass from one group to another. These constraints were identified on the basis of a review of the existent literature regarding conceptualizations and operationalizations of permeability: O*bjective constraints*—the outgroup or its determining characteristics are perceived as too distant and restricted (Haslam et al., 2000); *personal constraints*—lack of individual capacities prevents a group member from entering the outgroup (Tajfel, 1975; Mummendey et al., 1999); *value constraints*—personal values prevent the person from leaving the ingroup or entering the outgroup (Ellemers, 1993; Tajfel, 1974); *constraints imposed by the ingroup,* and *constraints imposed by the outgroup*—the ingroup and/or the outgroup does not approve the mobilization between groups (Tajfel, 1974).

By taking into account these ten sub-dimensions we aimed to develop a comprehensive scale of permeability that can be applied to all social groups, whether group membership is transient or stable over longer periods of time. We expected this scale to be broadly applicable, to help distinguish different types of social groups, and to predict the endorsement of different types of intergroup attitudes and behavior, as suggested by theory and empirical findings. In the following sections we outline the development of the permeability scale.

Scale Development and Validation

The permeability scale was developed according to a 4-step procedure advocated by Hinkin (1998) plus three extra steps: Step 1, item generation; Step 2, exploratory factor analysis (EFA) and item reduction; Step 3, cluster analysis to derive a homogenous clustering of the factors; Step 4, confirmatory factor

analysis (CFA); Step 5, measurement invariance; Step 6, construct validity analyses in which we test the hypotheses that permeability predicts endorsement of different types of intergroup attitudes and behaviors; and, Step 7, application of the scale in which we test the hypothesis that innate and non-innate social groups differ in their perceptions of permeability. In the present section we first describe the participants and samples used for data collection. We then outline the permeability scale development following the analytical steps mentioned above.

Participants and Samples

Data were collected across two studies each including different social groups. Study 1 included *older adults* and *women* who participated via Amazon's Mechanical Turk (Mturk) for 0.50 US dollars. Study 2 included five social groups: *older adults*, *women*, *lower educated people, African Americans and Latino Americans,* and *obese people*[7], who participated via Mturk for 0.75 US dollars. All participants were located in the United States of America. Assignment to the groups was achieved by asking participants a series of demographic screening questions. Unaware of the screening criteria, participants who met one of the specifics of the 5 groups were invited to complete the main questionnaire. Allocation of participants to groups was based on the following criteria: older adults were participants aged 40 years and older based on the US anti-age discrimination law which protects applicants/employees above age 40; people with lower levels of education were participants with either no qualifications (4%), less than a high school diploma (22%), or no college degree (74%) based on research on educational levels as a social category (Kuppens, Easterbrook, Spears, & Manstead, 2015); obese people were participants with a body mass index (BMI) of 30 or higher based on the international classification of overweight and obesity by the World Health Organization, and on previous research on overweight people as a social category (Alperin, Hornsey, Hayward, Diedrichs, & Barlow, 2014). Participants were first informed about their group assignment and were given the option to terminate the study if they disagreed with the classification or did not want to answer questions regarding this category. As an assessment of whether participants felt that their ingroup was of lower status relative to the outgroup, we asked them to rate the general overall status of both the ingroup and the outgroup on a scale from 1 (*low status*) to 7 (*high status*). Participants of all groups rated their ingroup as lower in status relative to the outgroup except older adults, whose ratings of ingroup and outgroup status did not differ[8]. Table 4.1 contains information about the Study 1 and 2 samples.

[7] Due to a technical error, 73 participants did not belong to the group of obese persons as they had a body mass index between 25 and 30. According to the international classification of overweight and obesity by the World Health Organization they would be classified as overweight rather than obese (e.g., Gilmore, 1999). These participants were removed from the analysis.

[8] Although older adults did not rate their group as significantly lower in status than the group of younger adults, there is abundant evidence of older adults' disadvantaged position in Western society (e.g. Levy, 2003). For this reason and because our measurement of permeability was designed to be applicable across both high and low status groups, we considered the data of the group of older adults suitable for the development and validation of the scale.

Table 4.1
Samples Composition and Participants Demographics of Studies 1 and 2

Study	Target group (Ingroup)	Contrast group (Outgroup)	Mean age	SD age	% female	No. Outliers[1]	Sample size	Specifics	Status differences (Outgroup-Ingroup)
1	Older adults	Younger adults	51.97	8.39	56.7%	7	164	40 years and older	-0.17 n.s.
	Women	Men	28.07	7.91	100.0%	7	180		1.01***
2	Older adults	Younger adults	51.84	8.25	55.3%	5	141	40 years and older	0.21 n.s.
	Women	Men	26.41	6.06	100.0%	2	138		1.26***
	People with lower levels of education	People with higher levels of education	34.68	9.97	64.8%	9	128	Participants with either no qualifications (4%), less than a high school diploma (22%), or no college degree (74%)	2.48***
	African Americans	White Americans	33.6	11.07	61.1%	2	90	Data of African Americans and Latino Americans was aggregated into the group of Ethnic Minorities	2.19***
	Latino Americans	White Americans	31.05	9.76	38.2%	0	55		1.82***
	Obese people	Normal-weight people	29.69	5.43	53.7%	5	67	BMI of 30 or higher (M_{BMI} = 36.26, SD_{BMI} = 5.94)	2.56***

Note. [1]Participants were excluded from analyses based on the Mahalanobi's distance method for detecting multivariate outliers (Tabachnick & Fidell, 2001). n.s.= not significant; *** $p < .001$.

Step 1: Item Generation

We used both a deductive and an inductive approach to develop our initial set of items (Hinkin, 1998). Based on previous theoretical conceptualizations of permeability we both adapted existing and created new items to measure the two main dimensions: *membership permeability*, the perceived possibility of changing group membership; and *status permeability*, the possibility of accessing the status and corresponding resources that are typical of the outgroup. Within these two dimensions we developed items that measured the five possible constraints that could aid or hinder social mobility between social groups. As mentioned, these constraints could be objective (these items were based on the discreteness items of essentialism by Haslam et al., 2000), personal, value, imposed by ingroup, and imposed by outgroup. This resulted in 52 items rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). In both studies, items were presented to participants in random order within the *membership* and the *status* dimensions. The phrasing of the items was adapted depending on the social group in question (see Table 4.2 for final items)[9].

Step 2: Exploratory Factor Analyses and Initial Item Reduction

This step made use of the Study 1 data. The first stage of item reduction was based on statistical considerations: we examined the inter-item correlations and deleted three items that correlated less than .40 with all other items in both groups, and two more items that correlated less than .40 in the group of older adults (Hinkin, 1998).

We then conducted EFA's using principal axis factoring with Promax rotation (Russell, 2002). EFA's were iterated with item reduction taking into account three criteria for item retention (Hinkin, 1998): In order to retain items which most clearly represented the underlying construct we removed those items which loaded lower than .40 on the intended factor (Criterion 1) or that loaded with a difference of less than .20 on two factors (Criterion 2). Furthermore, we removed items with communalities below .30 (Criterion 3). This process was carried out simultaneously for both groups, older adults and women. Thus, in each iteration, items were excluded when they met at least one of three exclusion criteria for at least one group, and we applied a new EFA within each group every time we reduced the number of items. Through the iterative process 26 items were excluded.

The resulting scale consisted of 26 items. In the group of older adults, the 26 items loaded on seven factors with eigenvalues greater than 1. As mentioned we had expected items to load on ten sub-dimensions: 2 (membership, status) x 5 (objective, personal, value, imposed by ingroup, and imposed by outgroup

[9] In order to further assess the face validity and applicability of the items to the intended social groups, we conducted a survey among 28 experts in the areas of intergroup relations and social identity theory. They were asked to (a) rate the extent to which the final scale items operationalize a definition of permeability we provided and (b) rate how well the items measured permeability in our sample groups. Experts felt the scale items reflected our definition of permeability well, although some expressed concern about the value constraint items. This may be because at the time we had not integrated the subjective aspect of permeability in our definition. The experts felt the items applied well to all subgroups. The quantitative results of this survey are presented in the supplementary material.

constraints). We obtained three factors less than expected because the value constraints of both dimensions loaded on the same factor, and the constraints imposed by ingroup of the membership dimension and the constraints imposed by outgroup for both dimensions loaded on the same factor. The 7-factor solution accounted for 71.42% of the overall variance (see Table 4.2 for loadings and communalities of the final items). In the group of women, the 26 retained items loaded on six factors with eigenvalues greater than 1 and accounting for 68.4% of the overall variance. We obtained one factor less than in the group of older adults because the constraints imposed by ingroup and by outgroup for both dimensions loaded on the same factor.

Table 4.2
Pattern/Scale Loadings and Communalities of EFA for Each of the Retained Items of the Developed Permeability Scale for the Group of Older Adults

Item	Factor	Sub-dimension/Item legend	Pattern	Structure	Communality (after rotation)
		Membership Permeability. Objective constraint			
1	4	[Ingroup] and [outgroup] are fundamentally different (-)	0.87	0.83	0.69
2	4	[Ingroup] and [outgroup] are worlds apart (-)	0.7	0.8	0.66
3	4	The difference between an [ingroup member] and an [outgroup member] is clear-cut (-)	0.61	0.69	0.53
		Membership Permeability. Personal constraint			
4	3	I can physically appear as an [outgroup member] if I want	0.92	0.83	0.74
5	3	No matter what effort I make, I will never be seen as an [outgroup member] (-)	0.82	0.87	0.78
6	3	I could be regarded as an [outgroup member] if I wanted to	0.83	0.85	0.73
7	3	There is nothing that I can do that can make me be considered as an [outgroup member] (-)	0.77	0.82	0.7
		Membership Permeability. Value constraints			
8	1	Passing myself off as an [outgroup member] goes against my values (-)	0.8	0.83	0.74
9	1	Wanting to appear as an [outgroup member] goes against who I am (-)	0.71	0.83	0.76
10	1	Wanting to be treated as an [outgroup member] goes against my beliefs (-)	0.71	0.81	0.72
		Status Permeability. Objective constraint			
11	5	It is physically possible for some [ingroup members] to do all the activities that [outgroup members] can do	0.7	0.68	0.49
12	5	Some [ingroup members] have at least the same physical capacities that [outgroup members] have	0.79	0.78	0.63
13	5	It is physically possible for some [ingroup members] to access the same positions in society as [outgroup members]	0.5	0.57	0.37
		Status Permeability. Personal constraint			
14	6	No matter what effort I make, I cannot access the same resources that an [outgroup member] can access (-)	0.86	0.84	0.74

15	6	The truth is, I can do very little to access resources that [outgroup members] typically have access to (-)	0.84	0.88	0.79
		Status Permeability. Value constraints			
16	1	Occupying positions in society that are typical of [outgroup members] goes against my values (-)	0.77	0.67	0.55
17	1	Accessing resources that are typical of [outgroup members] is against who I am (-)	0.66	0.64	0.51
18	1	Doing activities that are typical of [outgroup members] goes against my principles (-)	0.72	0.68	0.53

Notes. (-) refers to items that need to be reverse coded. Eigenvalues with their corresponding percentage of variance explained were: 8.22 (31.62%) for Factor 1; 2.19 (8.41%) for Factor 3; 1.86 (7.16%) for Factor 4; 1.31 (5.04%) for Factor 5; 1.13 (4.34%) for Factor 6. Items were adjusted depending on the social group. For example, Item 1 for the different groups read: "Older adults and younger adults are fundamentally different", "Women and men are fundamentally different", "People with lower levels of education and people with higher levels of education are fundamentally different", "African American and White Americans are fundamentally different", "Latinos and White Americans are fundamentally different", and "Obese people and normal-weight people are fundamentally different".

Step 3: Cluster analysis

Cluster analysis organizes the data into meaningful clusters based on similarity. Given that we did not find an identical factor structure for both groups, we performed a hierarchical cluster analysis on the data from both studies to obtain a homogeneous and simplified grouping of the proposed subscales that was applicable across groups (Burns & Burns, 2008). Cluster analysis was done using Ward's method, and applying squared Euclidean Distance as the measure of distance. The variables used for this analysis were the ten theoretical subscales combined for both groups in Study 1 and for the five groups in Study 2.

Results suggested a grouping of variables into three clusters: Cluster 1 included objective, personal and value constraints defining *membership permeability*. Cluster 2 included objective, personal and value constraints defining *status permeability*. Cluster 3 included constraints imposed by ingroup, and constraints imposed by outgroup of both membership and status permeability defining *social permeability*. The 3-cluster solution was robust across groups and grouped variables in a sound three sub-dimension division—membership permeability (Cluster 1), status permeability (Cluster 2), and social permeability (Cluster 3)—which we retained for the next step of scale development.

Step 4: Confirmatory Factor Analyses

In order to obtain the best model across groups, we performed CFA using the data of both studies. We assessed model fit by considering the following commonly used indices (Hu & Bentler, 1999; Kline, 1998): The chi-square (χ^2) divided by its degrees of freedom, where a ratio below 3 indicates that the model fits the data well; the Comparative Fit Index (CFI) which indicates how much better the model is compared to a null-model—where variables are assumed to be unrelated—(should be higher than .95); the Root Mean Square Error of Approximation (RMSEA), which indicates the badness of fit of the model in the population (should be less than .08); the Standardized Root Mean Square

Residual (SRMR; should be less than .08), and the Bayesian Information Criterion (BIC; when comparing models a smaller BIC value indicates a better tradeoff between fit and complexity). Furthermore, we used the Satorra-Bentler test for model goodness of fit versus the saturated model, which is robust to non-normality. The Lavaan (version 0.5-17) package in R for Windows (version 3.2.0) was used for these analyses.

We tested two models based on the previous steps. A first model was based on the division suggested by the cluster analysis; it included all 26 items obtained after the EFA's and assigned these to membership, status, and social permeability (Model 1; see Figure 4.1a). Inspection of the correlations between the three factors showed that the third factor had mostly low or nonsignificant correlations with the other two factors. Therefore, we performed CFA on a second model based on only two factors, the membership and the status permeability's excluding the 8 items that assessed social permeability (Model 2; see Figure 4.1b). Model 1 had poor fit indices particularly for the groups of lower educated and obese. Model 2, however, had good fit indices across all groups, except for slightly low CFI levels in the lower educated and the ethnic minority groups, and the SRMR for ethnic minorities. Model 2 was thus the preferred model, consisting of 18 items (see Table 4.3).

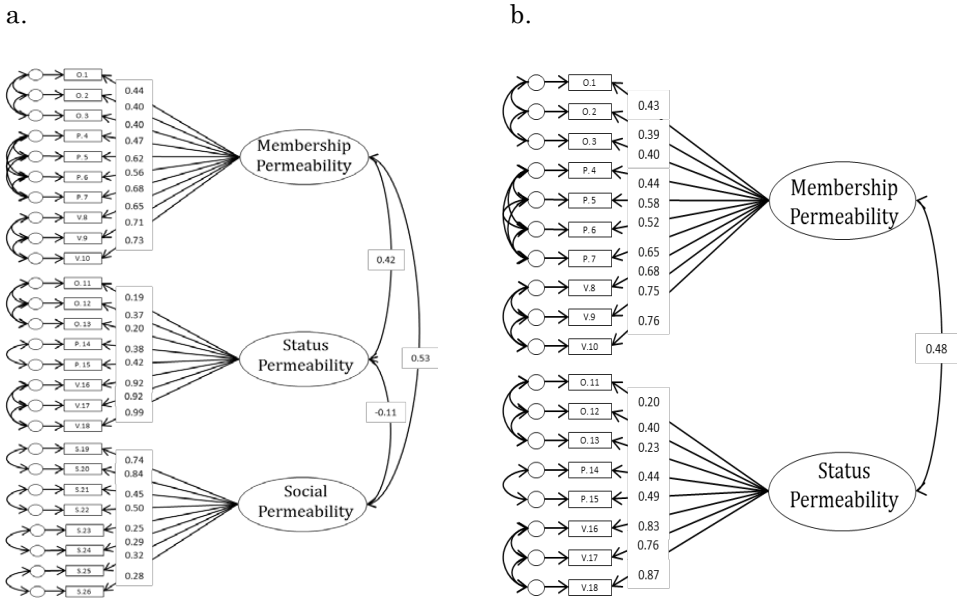

Figure 4.1. Alternative models for different configurations of the proposed permeability scale with item loadings of all groups in Study 2. Model 1 corresponds to a 3-factor solution based on membership, status and social permeability (a). Model 2 corresponds to a 2-factor solution based on membership and status permeability (b). Both models allow the errors within the same type of constraint to covary. O, objective constraints; P, personal constraints; V, value constraints; S, social constraints. Social constraints comprise both membership and status related items, as well as ingroup and outgroup constraints.

Table 4.3
Model Fit of Competing Models for Permeability Across Groups in Study 1 and Study 2

Study	Group	Model	χ^2	DF	χ^2/df	CFI	BIC	RMSEA	SRMR
1	Older adults	1	325.53	273	1.19	0.97	12746.23	0.03	0.07
		2	140.68	115	1.22	0.98	9122.91	0.04	0.05
	Women	1	464.36	275	1.69	0.91	15272.47	0.06	0.10
		2	164.54	115	1.43	0.97	10988.55	0.05	0.07
2	Older Adults	1	397.84	273	1.46	0.93	10796.37	0.06	0.09
		2	147.39	115	1.28	0.97	7578.32	0.05	0.07
	Women	1	417.73	273	1.53	0.91	11686.62	0.06	0.10
		2	150.94	115	1.31	0.97	8227.56	0.05	0.06
	Low educated	1	418.01	273	1.53	0.87	10756.98	0.06	0.09
		2	177.68	115	1.55	0.92	7450.50	0.07	0.07
	AA + Latinos	1	407.61	275	1.48	0.91	13146.01	0.06	0.11
		2*	196.29	117	1.68	0.93	9156.69	0.07	0.10
	Obese	1*	347.51	273	1.27	0.88	5845.22	0.06	0.11
		2*	129.67	117	1.11	0.97	4002.50	0.04	0.08

Notes. CFI, Comparative Fit Index; BIC, Bayesian Information Criterion; RMSEA, Root Mean Square Error of Approximation; SRMR, Standardized Root Mean Square Residual. Model 1 corresponds to a 3 factor solution based on membership, status and social permeability. Model 2 corresponds to a 2 factor solution based on membership and status permeability. Both models allow the errors within the same type of constraint to covary. *Due to the occurrence of inadmissible solutions, we removed the residual correlation for one item in the status factor.

Means, standard deviations, reliabilities and correlations of Model 2 and its sub-dimensions are reported in Table 4.4 for all groups in both studies. The total scale and its two dimensions had adequate reliabilities for all groups and studies (α =.66 -.90). Importantly, the correlation between membership and status permeability was positive and moderate for most groups. This suggests the scale has discriminant validity since items that measured distinct factors proved to be discernible from each other (see Step 6 for our measures of discriminant validity). An exception was the group of ethnic minorities in which membership and status permeability were uncorrelated. This may indicate a tendency of this group to perceive the two forms of permeability as orthogonal: Ethnic minorities' perception that they may or may not pass up as member of the high status group may go along with either a high or low perceived chance of status advancement.

In sum, by selecting Model 2 above Model 1, we chose a stricter conceptualization of permeability that better fits a broader range of social groups. Indeed, although fear of social sanctions has been considered a part of the concept of permeability (Tajfel, 1974), our results reveal that a model that includes items measuring perceived social constraints does not provide a good fit across groups. We still consider social constraints meaningful in explaining people's perceptions of mobility between social groups. However, this type of constraint may not apply to all groups or may constitute another construct that is related to but distinct from permeability.

Table 4.4
Reliabilities and Descriptives of Membership Permeability, Status Permeability and Total Permeability of All Groups in Studies 1 and 2

Study	Group	Dimension	α	*M*	*SD*	Correlation Membership - Status Dimensions
1	Older adults	Membership	.89	4.03	1.12	.59***
		Status	.79	5.09	0.84	
		Total	.90	4.50	0.90	
	Women	Membership	.89	3.64	1.32	.40***
		Status	.81	5.37	0.98	
		Total	.89	4.41	0.99	
	Aggregated Groups Study 1	Membership	.89	3.83	1.24	.44***
		Status	.81	5.24	0.92	
		Total	.89	4.45	0.95	
2	Older adults	Membership	.88	3.79	1.08	.53***
		Status	.85	5.19	0.84	
		Total	.90	4.42	0.86	
	Women	Membership	.90	3.80	1.38	.39***
		Status	.77	5.64	0.79	
		Total	.88	4.62	0.96	
	Low educated	Membership	.81	4.88	0.91	.61***
		Status	.77	5.21	0.89	
		Total	.86	5.02	0.81	
	Ethnic minorities	Membership	.84	3.45	1.25	.13
		Status	.79	5.62	0.99	
		Total	.81	4.41	0.87	
	Obese	Membership	.66	4.97	0.82	.48***
		Status	.82	5.50	0.98	
		Total	.81	5.21	0.77	
	Aggregated Groups Study 2	Membership	.87	4.07	1.28	.28***
		Status	.80	5.43	0.91	
		Total	.86	4.67	0.91	

Note. *** $p < .001$.

Step 5: Measurement Invariance

This step assessed whether our scale measures the same constructs across groups, in other words, whether participants in different groups interpret the scale similarly. Only then are we able to make comparisons across groups regarding participants' perceptions of permeability. To determine whether the developed scale is measurement invariant, we ran four Structural Equation Models using Lavaan (version 0.5-17). Each of the four models was run separately for the two studies.

Models varied in their constraints: Model A did not impose equality constraints to factor loadings, intercepts or residuals. This model merely tested

whether the factor structure was similar across groups (*pattern invariance*). Model B constrained the factor loadings to be equal across groups while the other parameters were allowed to differ. This model tested whether participants across groups attributed the same meaning to the two assessed dimensions of permeability (*metric invariance*). Model C constrained the loadings and intercepts to be equal across groups. This model tested whether respondents attributed the same meaning to permeability, as does Model B, and also whether the levels of the underlying items (intercepts) were equal across groups (*scalar invariance*). When this is the case, we can compare mean differences across groups. Model D constrained factor loadings, intercepts and residuals to be equal across groups. This model tested whether the explained variance for every item was the same across groups (*full uniqueness*). If this test is not supported, group means can still be compared on the latent variable but this is measured with a different amount of error across groups (Van de Schoot, Lugtig, & Hox, 2012).

Table 4.5 shows the indices of model fit of the four models mentioned above and for both studies[10]. For Study 1, the four models had good fit indices, while for Study 2 models C and D had CFI and RMSEA indices slightly below the threshold. However, for both studies, Model D had the lowest BIC value. This indicates that this model fitted the data best since it had the best trade-off between model complexity and amount of variance explained. Looking more closely at the fit indices, we can conclude that there is evidence of scalar invariance in Study 1 and we can therefore safely compare the means across these groups. In Study 2 however, we found evidence of metric invariance, but since the fit of Model C dropped considerably there was less evidence of scalar invariance. We can therefore proceed to compare the mean permeability of the groups of older adults and women (Study 1), but we should be more cautious when comparing mean levels of permeability of lower educated, ethnic minorities and obese.

Table 4.5
Model Fit of Increasingly Constrained Models to Assess Measurement Invariance Across Groups in Study 1 and Study 2

Study	Model	χ^2	df	χ^2/df	CFI	RMSEA	BIC
1	A	346.78	230	1.51	0.96	0.05	20682.84
	B	370.41	246	1.51	0.96	0.05	20613.02
	C	448.74	262	1.71	0.94	0.06	20597.91
	D	495.87	280	1.77	0.93	0.07	20539.90
2	A	775.70	468	1.66	0.94	0.07	33782.71
	B	874.05	516	1.69	0.93	0.07	33578.00
	C	1108.15	564	1.96	0.89	0.08	33509.06
	D	1398.75	618	2.26	0.84	0.10	33458.72

Notes. CFI, Comparative Fit Index; RMSEA, Root Mean Square Error of Approximation; BIC, Bayesian Information Criterion.

[10] We excluded the group of obese for this analysis as the sample size of this group was too small and models including this group did not converge.

Step 6: Construct Validation

This step assessed whether the scale is associated with constructs as predicted by theory and previous findings. Specifically, we considered whether the scale correlates with measures that are designed to assess similar constructs (convergent validity), does not correlate with measures that are designed to measure different concepts (discriminant validity), and whether it predicts outcomes as suggested by theory (criterion-related validity; Hinkin, 1998).

In the following we further describe each of these types of validity, introduce the measures used to assess them, and report the results. Unless indicated otherwise, scale endpoints ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items are given for ingroup versus outgroup. Phrasing was adapted for the groups by modifying the name of ingroup and outgroup as presented in Table 4.1. We aggregated items into scales for analyses. Furthermore, unless results required an analysis of individual groups, data of the groups was aggregated for each study.

Does the scale correlate with similar measures?

Due to the lack of an established permeability measure, we assessed convergent validity with two related measures: Assessment of ingroup-outgroup overlap, administered in Studies 1 and 2, and a one-item measure of permeability, administered in Study 2. Furthermore, we assessed whether group specific constructs related to permeability: age (for older persons), levels of education (for the lower educated), and BMI (for the obese).

Ingroup-outgroup overlap. This measure assesses the perceived proximity of ingroup and outgroup by means of a graphical representation, where the two groups are represented by two circles of equal size that vary in their proximity. This measure is related to permeability insofar as it assesses perceived similarity, closeness, intimacy, entitativity, and shared category membership of groups (Schubert & Otten, 2002). Indeed, previous studies have understood the pictorial scale of overlapping circles as a measurement of boundary permeability between groups (Buhrmester et al., 2012). The measure was introduced as follows: "When you think about the relationship between [ingroup] and [outgroup], which of these pictures best describes your thoughts?", rated from 1 (circles are most distant from each other) to 7 (circles are almost completely overlapping). We expected higher ratings of membership and status permeability to relate to greater perceptions of ingroup and outgroup overlap.

Global Permeability Perception. Participants were asked to rate their agreement with one item created for the purpose of assessing a global perception of permeability between groups: "The boundaries between the [ingroup] and the [outgroup] are rigid" (item was reverse coded). This item was based on the most generalized definition of permeability as assessed in previous research in the area of group processes (Lickel et al., 2000). We expected ratings of membership and status permeability to both relate positively to perceptions of global permeability.

Age, levels of education, and BMI. Previous research has assumed that advanced age is associated with lower perceived permeability of the group of older adults (Garstka et al., 2004). Although this assumption has not been empirically tested, we consider it plausible. Moreover, one can expect that for the

group of lower educated, lower levels of education are associated with lower levels of perceived permeability. For the group of obese, higher BMI should be related to lower levels of perceived permeability. To test these assumptions we used demographics of participants in Study 2.

Results and discussion. Our scale showed good convergent validity. Both membership and status permeability correlated positively with the visual measure of ingroup and outgroup overlap in both studies. Both dimensions of permeability were also positively correlated with global perceptions of permeability in Study 2 (see Table 4.6). Moreover, as expected, there was a negative correlation between both dimensions of permeability and age in the group of older adults and a positive correlation between both dimensions of permeability and level of education in the group of lower educated. A marginal negative correlation was found between the membership dimension of permeability and BMI in the group of obese (see Table 4.7). These results provide support for the convergent validity of our scale.

Table 4.6
Correlations Between Permeability and Main Theoretical Correlates for Studies 1 and 2 to Assess Convergent, Discriminant and Criterion-related Validity

Study	Dimension	Ingroup-outgroup overlap	Global Permeability	Meritocracy	Self-efficacy	Ingroup identification	Outgroup identification
1	Membership	.35***				-.39***	.29***
	Status	.34***				-.08	.10†
	Total	.40***				-.32***	.26***
2	Membership	.33***	.29***	-.01	-.01	-.27***	.37***
	Status	.25***	.26***	.06	.25***	-.09*	.15***
	Total	.36***	.33***	.02	.11**	-.24***	.34***

Notes. † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4.7
Correlations Between Perceptions of Permeability and Individual´s Defining Membership Characteristic for Older Adults, Lower Educated and Obese

Study	Group	Dimension	Age	Level of education	BMI
1	Older adults	Membership	-.30***		
		Status	-.23**		
		Total	-.31***		
2	Older adults	Membership	-.38***		
		Status	-.18*		
		Total	-.35***		
	Low educated	Membership		.22*	
		Status		.21*	
		Total		.24**	
	Obese	Membership			-.23†
		Status			.11
		Total			-.08

Notes. † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Does the scale correlate with related but distinct measures?

As we outline below, we assessed here whether permeability is distinct from measures of meritocracy and self-efficacy, administered in Study 2. Low correlations between both forms of permeability and each of these measures would indicate discriminant validity.

Meritocracy. This construct is related to permeability in that it refers to the possibility of individual 'movement' into a high status group. However, in contrast to permeability, such movement should not be dependent on the social structure at hand but should solely be based on individual merit (Jost, Pelham, Sheldon, & Sullivan, 2003). Despite these differences, meritocratic beliefs have been used to measure system permeability (Levin et al., 1998; Van Laar et al., 2008). We expected meritocracy to show weak (positive) correlations with permeability. To measure meritocracy we adapted the four items of McCoy and Major (2007), e.g., "Most people who don't get ahead should not blame the system; they really have only themselves to blame" (α=.74).

Self-efficacy. This construct refers to a sense of personal competence and capacity to cope with life stressors and is associated with higher achievement (Scholz, Gutiérrez Doña, Sud, & Schwarzer, 2002). It is related to permeability in that it should be indicative of perceived possibilities of personal advancement. Previous research has linked group-efficacy (as a form of self-efficacy) to collective strategies used by low status group members (Mummendey et al., 1999). Self-efficacy should be distinct from permeability as it does not take into account restraints or possibilities of advancement provided by the social structure. Therefore, we expected self-efficacy to show weak (positive) correlations with permeability. Participants indicated the extent to which six

self-efficacy related statements were true to them, e.g., "If someone opposes me, I can find the means and ways to get what I want" (α=.87) (Scholz et al., 2002).

Results and discussion. As expected, meritocracy did not correlate with any of the sub-dimensions of permeability (see Table 4.6). This suggests it may be problematic to operationalize meritocracy as a proxy to system permeability, as previous work has done (e.g., Levin et al., 1998; Van Laar et al., 2008). Yet, there may be groups for whom these concepts overlap more strongly, such as those defined by economical stratification.

Self-efficacy was not correlated with membership permeability but was positively correlated with status permeability. This difference could be due to status permeability relying more strongly on the feeling that one has the ability and the personal tools to achieve higher status in society (although apparently not via meritocratic means). In contrast, membership permeability may depend more on external group related features, such as one's biology (e.g., gender, ethnicity). We come back to this in the General Discussion. Overall, results for meritocracy and self-efficacy confirm the scale's discriminant validity, albeit somewhat more strongly for membership than status permeability.

Does the scale predict outcomes as suggested by theory?

To assess criterion validity, we measured identification with the ingroup and with the outgroup in Studies 1 and 2, and endorsement of individual and collective strategies in Study 2.

Identification with the ingroup and outgroup. In line with SIT, previous research reveals that higher perceptions of permeability are associated with lower levels of ingroup identification (Ellemers et al., 1988; Mummendey et al., 1999). Therefore we expected the two dimensions of permeability to be negatively correlated with ingroup identification and positively with outgroup identification. In Study 1, ingroup identification was assessed with 14 items adapted from Leach et al. (2008), e.g., "The fact that I am an [ingroup member] is an important part of my identity" (α=.93).

In Study 2, ingroup identification was assessed via three items adapted from Leach et al. (2008), e.g., "I identify with the [ingroup]" (α=.88). Outgroup identification was assessed in both Study 1 and 2 by means of one item from Postmes, Haslam, and Jans (2012): "I identify with the [outgroup]".

Individual versus collective action endorsement. Previous research has revealed that, when permeability is perceived to be high, members of low status groups favor individual (mobility) over collective (action) strategies. When permeability is perceived to be low, they favor collective over individual strategies or favor both equally (Lalonde & Silverman, 1994; Wright et al., 1990). To demonstrate the new scale's criterion-related validity we aimed to replicate these strategy preferences. Note that these studies measured what we define as membership permeability; our analyses for status permeability were therefore exploratory. *Individual mobility* (the most commonly measured individual strategy) was assessed with four items adapted from Tausch, Saguy, and Bryson (2015; e.g., "I work hard to achieve higher level positions in society"; α=.74). Endorsement of *collective action* (the most commonly measured collective strategy) was assessed by asking participants to what extent they found four actions important to undertake based on Derks, Van Laar, and Stroebe (2016),

e.g., "Work towards ensuring that [ingroup] have the same opportunities as [outgroup] in society" (α=.89).

Results and discussion. As expected, both dimensions of permeability were negatively correlated with ingroup and positively correlated with outgroup identification across samples (see Table 4.6). These correlations with ingroup and outgroup identification were stronger for membership than status permeability. This suggests that perceptions of membership, compared to status permeability are more strongly associated with outgroup versus ingroup connectedness. Yet, the pattern of results was as predicted for status permeability: using Fisher's transformation, z-tests revealed a significant difference in correlations of ingroup identification and status permeability and outgroup identification and status permeability, both in Study 1 (z = -1.98, p =.026) and Study 2 (z = -3.96, p <.001).

For the analysis of endorsement of individual or collective action, we performed an ANCOVA analysis using data of Study 2, with type of action endorsement (individual, collective) as within-subjects factor and permeability as the continuous moderator or covariate. In this analysis, a significant interaction between type of action endorsement and permeability would indicate that the *relative* endorsement of individual versus collective strategies differs as a function of permeability. We performed separate analyses for membership and status permeability. For membership permeability, results showed a significant interaction effect between permeability and type of strategy endorsement, F(1, 612)=7.10, p=.008, $\eta^2_{partial}$=.01. In line with expectations, follow-up analyses indicated that when individuals perceived membership permeability as high (1 SD above the mean), they endorsed individual over collective action (F(1, 612)=11.38, p=.001, $\eta^2_{partial}$=.02). However, when individuals perceived membership permeability as low (1 SD below the mean), they endorse individual and collective action equally, F(1, 612)=0.15, p=.695, $\eta^2_{partial}$=.00 (see Figure 4.2a). Likewise, results showed a significant interaction effect of status permeability and type of strategy endorsement, F(1, 612)=4.17, p=.041, $\eta^2_{partial}$=.01. Specifically, when individuals perceived status permeability as high, they endorsed individual over collective action, F(1, 612)=8.59, p=.004, $\eta^2_{partial}$=.01. However, when individuals perceived status permeability as low, they endorse individual and collective action equally, F(1, 612)=0.00, p=.967, $\eta^2_{partial}$=.00 (see Figure 4.2b). These results replicate prior work for membership permeability (Lalonde & Silverman, 1994) and reveal status permeability to be comparable regarding action endorsement. Overall, the results for identification and individual versus collective strategy endorsement thus support the scale's criterion-related validity.

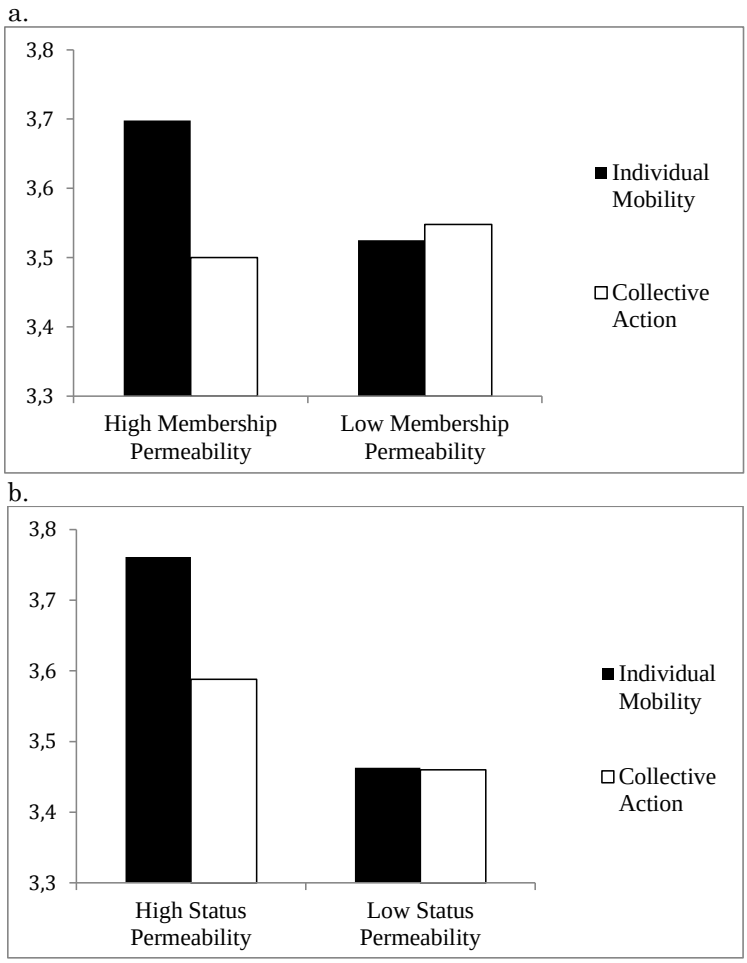

Figure 4.2. Individual versus collective action endorsement as a function of membership (a) and status permeability (b). Scale endpoints range from 1 to 5.

Step 7: Application of the Scale to Compare Groups

As a final step, we compared perceptions of permeability across different social groups, in line with the postulate of essentialist approaches that social groups differ in permeability perceptions. We administered our scale to five social groups that were expected to differ in their perceptions of permeability. For three groups in our study, category membership is biologically determined or innate, making membership access to another group impossible or extremely difficult at best: older adults[11], women, and ethnic minorities. For the two remaining groups, obese and lower educated people, category membership is acquired and

[11] Although the characteristic of 'innateness' does not fully apply to the group of older adults, we use this term to distinguish the groups of older adults, women and ethnic minorities from the less biologically determined social categories, the obese and lower educated.

changeable, thus making membership access feasible. Accordingly, we hypothesized that the 'innate' groups would score lower on membership permeability than the 'non-innate' groups. At the same time, they may score higher on status permeability. That is because the groups of obese and lower educated people have a shorter and less pervasive history of fighting against inequality than the groups of women and ethnic minorities, with older adults being in between. As a result, laws and social norms now widely exist which have facilitated the (perceived) access of women and ethnic minorities to higher social status positions, and, to a lesser extent, of older adults. Yet, no such laws exist for obese and lower educated persons.

Group comparisons applying Bonferroni correction in Study 2 showed that, as hypothesized, the lower educated and the obese rated membership permeability higher than women, older adults, and ethnic minorities (see Table 4.8 and Figure 4.3). Although average status permeability ratings were relatively high for all groups, status permeability was, as expected, rated significantly higher by women and ethnic minorities than by older adults and the lower educated. In sum, our findings point to the ability of our scale to assess between-group differences in perceptions of membership versus status permeability.

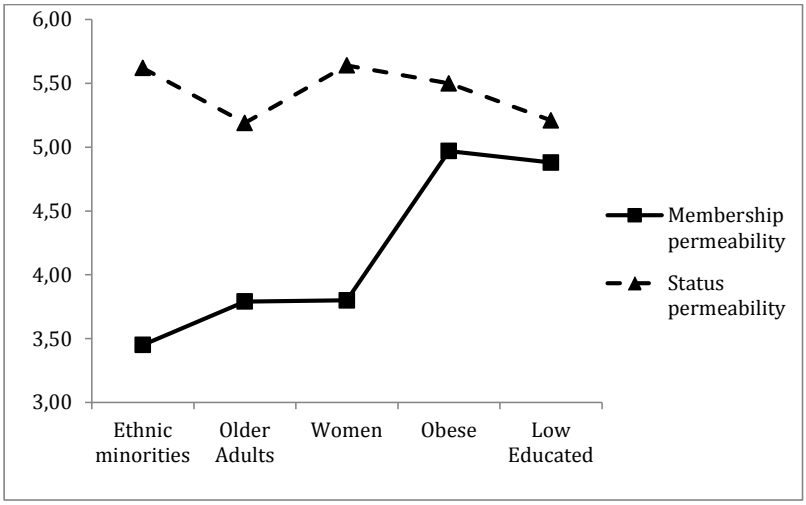

Figure 4.3. Means of membership and status permeability for all groups in Study 2. Scale endpoints range from 1 to 7.

Table 4.8
Mean Differences of Permeability and Permeability Sub-dimensions Between Groups in Study 2

			Membership permeability		Status permeability		Total permeability	
	Group (I)	Group (J)	Mean Difference (I-J)	Std. Error	Mean Difference (I-J)	Std. Error	Mean Difference (I-J)	Std. Error
1	Ethnic minorities	2	-0.35	.13	0.43*	.11	-0.00	.10
		3	-0.36	.14	-0.02	.11	-0.21	.10
		4	-1.53*	.17	0.12	.13	-0.80*	.13
		5	-1.43*	.14	0.41*	.11	-.61*	.10
2	Older adults	1	0.35	.13	-0.43*	.11	0.00	.10
		3	-0.01	.14	-0.44*	.11	-0.20	.10
		4	-1.18*	.17	-0.31	.13	-0.79*	.13
		5	-1.08*	.14	-0.02	.11	-0.61*	.11
3	Women	1	0.36	.14	0.02	.11	0.21	.10
		2	0.01	.14	0.44*	.11	0.20	.10
		4	-1.17*	.17	0.14	.13	-0.59*	.13
		5	-1.07*	.14	0.42*	.11	-0.41*	.11
4	Obese	1	1.53*	.17	-0.12	.13	0.80*	.13
		2	1.18*	.17	0.31	.13	0.79*	.13
		3	1.17*	.17	-0.14	.13	0.59*	.13
		5	0.10	.17	0.29	.13	0.18	.13
5	Lower educated	1	1.43*	.14	-0.41*	.11	0.61*	.10
		2	1.08*	.14	0.02	.11	0.61*	.11
		3	1.07*	.14	-0.42*	.11	0.41*	.11
		4	-0.10	.17	-0.29	.13	-0.18	.13

Note. * $p < .05$

General Discussion

Permeability of group boundaries is a key concept in explaining and understanding intergroup relations, such as ingroup and outgroup identification and behavioral reactions to intergroup inequality. Despite its theoretical and practical relevance, such as for examining conditions that elicit intergroup conflict (Ellemers et al., 1988), there is to date no validated measure of permeability. Consequently, permeability has been conceptualized and operationalized in a multitude of ways, which hampers the interpretation and integration of empirical findings (e.g. Hersby et al., 2009; Lalonde & Silverman, 1994).

Conceptualization of Permeability and Applicability of the Scale

The present work aims to fill this gap by providing a conceptualization of permeability that integrates different approaches in the literature—those focusing on artificially created groups and manipulating levels of permeability and those focusing on existent groups and measuring permeability of group boundaries. Based on the theoretical background of permeability outlined in SIT (Tajfel, 1975) and an integration of the different operationalizations found in the literature, we proposed a distinction between two forms of permeability. One can join a group by actually becoming a member of it: this we call *membership permeability*, such as a Black person who has his/her skin lightened to become (more) White. One can also cross group boundaries by making a status hierarchical advancement, which we call *status permeability* (e.g., Van Laar et al., 2008), such as a Black person who gains high status within a predominantly White organization. Our work provides strong support for this bi-dimensional structure consisting of membership and status permeability, as is also evidenced by good model fit for five different social groups across two different studies.

Predicting Intergroup Attitudes and Endorsement of Behavior

Importantly, our permeability measure is related to central indicators derived from SIT and a wide range of studies in the area of intergroup relations (Ellemers et al., 1990; Lalonde & Silverman, 1994): the attitudes members of low status groups hold with regard to their own and the high status group, as well as their endorsement of different types of behavior in response to low status. Membership, and to a lesser extent status permeability were associated with a decrease in ingroup and increase in outgroup identification. Moreover, as expected, membership and status permeability were related to greater endorsement of individual over collective actions. In contrast, when permeability perceptions were low, both types of strategies were endorsed equally. We thus conclude that both status and membership permeability relate to central indicators of intergroup relations.

It is important to note some unexpected but potentially interesting differences between status and membership permeability. Of the two types of permeability only status permeability correlated with self-efficacy. At the same time, status permeability correlated with ingroup and outgroup identification less strongly than did membership permeability. This may suggest that the two types of permeability signal different group connections (and possibly also different behaviors). Membership permeability may be more strongly related to, and dependent on, feelings of attachment to one's group, whereas status permeability may be more strongly related to the desire or need for additional resources of the outgroup, in part reliant on personal efficacy (see also Mummendey et al., 1999). Although additional empirical work is needed to draw firm conclusions, these initial results do support the utility of distinguishing between status and membership permeability.

Distinguishing Different Types of Social Groups

Work in the area of intergroup relations generally considers all low status groups to be comparable. In line with research in the area of essentialism and group processes (Haslam et al., 2000; Lickel et al., 2000), our work stresses the added value of distinguishing groups along the membership and status dimensions of permeability. We classified two different types of groups and compared their permeability perceptions, groups whose membership is innate or unchangeable (in our case, older adults, women and ethnic minorities) versus non-innate or changeable (in our case, obese and the lower educated). The non-innate groups had higher perceptions of membership permeability than the innate groups. Vice versa, the innate groups (women and ethnic minorities) had the highest perceptions of status permeability. Our work supports the added value of taking into account differential perceptions of permeability across different types of groups. This point is exemplified by one of the few studies looking at intergroup contact between non-innate rather than innate groups, in this case overweight people (Alperin, Hornsey, Hayward, Diedrichs, & Barlow, 2014). The positive effects of intergroup contact on intergroup attitudes applied to a lesser extent for the group of overweight. This can be explained by the fact that the group of overweight is considered permeable and thus threatening to people who are not overweight. Thus perceptions of permeability can alter the positive effects of intergroup contact which are generally found in innate groups.

Taken together, both this empirical work and our conceptual distinction between status and membership permeability suggests the importance of taking into account differences in attitudes and endorsement of behavior towards low status groups as a consequence of type of permeability perception.

Future Directions

The present work also suggests future avenues for the study of social change (i.e., "upgrading the status position of the ingroup as a whole"; Ellemers et al., 1990, p.233). Whether social change is even possible, and what the opportunities for social change are, may depend on the type of permeability individual group members and different social groups perceive. Note that here lies potential to study how different types of social groups that vary in levels of membership and status permeability perceive opportunities for social change.

For those who have low perceptions of the membership permeability of their group (e.g., members of ethnic minority groups), perceptions of status permeability are an essential element in perceiving opportunities for social change. In this case, we can expect social change to be achieved by attempts to gain access to similar resources as the high status group. For groups who perceive both high membership and high status permeability (e.g., the lower educated), more social change options are available. One might gain membership access to the high status group (e.g., by changing one's education level), or one might gain resource access to the high status group (e.g., by requesting higher salaries for the lower educated). In other words, by measuring different dimensions of permeability we can map out the social change options available to different groups. In sum, the present conceptualization of permeability also provides interesting avenues for studying social change perceptions across

individuals and different types of groups (see also Louis, 2009; Stroebe, Wang, & Wright, 2015).

Furthermore, while SIT (Tajfel, 1974; Tajfel & Turner, 1979) has focused on low status group members, it would be interesting to expand the nature of the social contexts studied. For example, what are perceptions of permeability and subsequent behavioral responses in high status group members? High status groups overall show even higher identification with their group and more outgroup bias (Bettencourt, Dorr, Charlton, & Hume, 2001). Such bias can increase when high status group members feel threatened, such as when group boundaries are considered permeable (e.g., Scheepers, Ellemers, & Sintemaartensdijk, 2009). Work by Alperin and colleagues (2014) suggests that prejudice and aversion of high status group members towards low status group members can be instigated by the fear of entering the low status group, thus by experiences of high membership permeability. By contrast, the experience of status permeability may induce quite different concerns in high status group members, pertaining more to preservation of resources and protection of one's group identity (e.g., Johnson et al., 2005). Within groups changes in status relations may also occur: a woman may for example be low status in some contexts (e.g., a female professor among a majority of male professors) and high status in others (e.g., a female professor among male PhD students). It is possible that such changes in context temporarily affect perceptions of, in this case, status permeability. Notably, such an approach moves beyond SIT to consider status variability within groups. We conclude that studying how the social context and potential changes in status affect responses of high status group members to different types of permeability is an interesting avenue for future research. Our scale is well suited for such research as it was designed to be applicable to both high and low status groups.

Limitations

The current work has some limitations that can be addressed in future research. First, the sample size for obese persons was rather small. This may explain the non-convergent models of measurement invariance, the smaller reliability of membership permeability, the lack of significant correlations with BMI, and the lower model fit indices for this group compared to the other groups. Lower fit indices in the CFA for the groups of lower educated and ethnic minorities as well as problems with measurement invariance may also be related to small sample sizes.

A second potential limitation pertains to the sample. Recruitment of participants via an Internet site raises concerns regarding the lack of control over respondents, for example, whether they are subject to distractions or whether they take the task seriously. However, research on the reliability of data obtained via Mturk showed that it meets or even exceeds the psychometric standards associated with published research. Furthermore, Mturk has the advantage that participants are more demographically diverse than is the case for more traditional recruitment methods (Buhrmester, Kwang & Gosling, 2011).

Third, we relied on the BMI to classify participants as obese. This may be problematic because BMI does not take into account muscle mass. Notwithstanding these limitations, the fact that the scale was applicable to five

different social groups with different permeability perceptions makes us confident that the scale can also be applied to other social groups. Future research can profit from testing the correlates and predictive value of the scale when applied to other types of groups, such as ideological or economic groups.

Conclusion

The present research unifies existing theoretical and empirical work on permeability perceptions and intergroup relations by proposing a comprehensive conceptualization of permeability as a two-dimensional concept, which comprises membership and status permeability. Findings underscore the notion that low status groups differ regarding perceptions of these two dimensions of permeability. We hope our scale will stimulate researchers to take into account different types of permeability when trying to understand either differences between different types of social groups or group members' attitudes and responses towards inequality.

Chapter 5

Summary and Discussion

While an aging population represents challenges for organizations and society at large, transitioning into older age comes with challenges for the individual. That is, older adults have to deal with a challenging identity shift from a high-status to a low-status group that is burdened by negative stereotypes, such as being considered forgetful, inflexible and feeble (Chasteen, Schwarz, & Park, 2002). Against the background of these highly relevant and contemporary phenomena, this dissertation focuses on the identification change of adults who transition to older age when perceiving cues of aging and agism.

Aging can be accompanied with a sense of status loss—especially in Western societies—, and often younger adults but also older adults themselves associate aging with physical and mental decline. Perceiving cues of aging can therefore have negative consequences for older adults' well-being. Furthermore, negative stereotypes, prejudice and discrimination against older adults are present in the workplace, the medical system, and the media, affecting older adults' social and economical opportunities, self-esteem, and mental and health outcomes (North & Fiske, 2012).

Given that stepping into old age represents a problematic identity transition, the overarching question of the present dissertation was: *How do perceived cues of aging and agism affect older adults' identity responses, and what are the consequences of this on their well-being?* In particular, throughout this dissertation I studied two components of older adults' age identity: subjective age bias (SAB) and age group identification (age GI). Furthermore, I focused on four highly relevant well-being outcomes: self-esteem, subjective health, negative affect, and cognitive engagement. This dissertation contributes to the aging and social psychological literatures by studying these constructs and their relationships in a dynamic fashion. First, it includes two types of identity responses: One individual through SAB, and one collective through age GI. Second, it studies the components of age identity as stable properties by comparing people's levels of SAB and age GI, but also as dynamic by following their daily change for single individuals. It further studies both the stable and dynamic age identity responses in relation with aging cues and well-being outcomes. Finally, it develops the conceptualization and measurement of a key concept to explain identification formation and intergroup behavior in low status groups such as the group of older adults: the perceived permeability of one's group boundaries. It further compares the group of older adults with other low social status groups in their permeability perceptions and studies the consequences of permeability for identity and behavioral intentions across these groups.

Below I summarize the main findings of each empirical chapter. I then proceed to reflect on the theoretical and practical implications of these findings. I finalize this chapter by providing future research directions and some general concluding remarks.

Overview of main findings

Do older adults modify their age identity in the face of age discrimination? And are there consequences of such modifications for well-being? In line with a

longstanding interest in the buffering properties of collective and individual strategies to self-esteem and a growing interest in how they relate to health outcomes (S. A. Haslam et al., 2009), *Chapter 2* addressed the question whether such buffering existed when adults who transition into older age face age discrimination. Based on the social psychology and aging literatures we proposed two parallel routes by which older adults can buffer their well-being in the face of perceived age discrimination: an individual route in which experiences of discrimination are countered by lowering one's felt, compared to actual, chronological age (SAB), and a collective route by which targets turn to their group and increase levels of identification with other older adults (age GI). Results of Chapter 2 provided support mainly for the individual route. That is, a meta-analysis that summarized three experimental studies showed that older adults who were subjected to age discrimination reported feeling younger compared to those who were not subjected to discrimination. Furthermore, an increased SAB was related to higher subjective health across studies and to higher self-esteem in two of the studies. The buffering properties of SAB however, were only confirmed by findings of Studies 1 and 2, which showed that SAB mediated the relationship between discrimination and subjective health. On the other hand, older adults did not consistently increase age GI when facing age discrimination, and age GI was not related to well-being. Importantly, results of Chapter 2 showed the two routes to be independent for adults transitioning from midlife into old adulthood. That is, SAB and age GI were uncorrelated with each other across studies, and whereas age GI was not associated with well-being across studies, SAB was consistently associated with subjective health and self-esteem.

Chapter 3 addressed the question: What is the role of daily identity components in shaping negative age-related personal and social experiences, and what are the effects of this on people's daily well-being? Adults transitioning from middle-age into older age undergo a transition that is often associated with cognitive, physical, and status loss. This is the case for older workers in Western societies where older age is linked to reduced competence (Cuddy & Fiske, 2002; Posthuma & Campion, 2009). When studying SAB and age GI, the social psychological and largely the aging literature approach them as if they were stable properties. However, because adults in this transition period have not yet consolidated their identity as older adults, in Chapter 3 we reasoned that SAB and age GI could be flexible and progressive properties that may vary per person and per day. We hypothesized that as a consequence of this flexibility, on some days older workers may attribute negative personal and social events to their increased age while on other days they may attribute them to temporary, circumstantial reasons. For example, on days when people feel older they may attribute an instance of fatigue to their age while on days when people feel younger this same instance of fatigue could be attributed to a short last night's sleep. Similarly, on days when people strongly identify with the group of older workers they may attribute an unpleasant remark from a colleague to age discrimination, while on days when they do not identify strongly with the group of older workers, this same instance could be attributed to this colleague having a bad day. Results of Chapter 3 revealed that age identity components indeed fluctuate at a daily level and that these fluctuations affect daily age attributions.

Specifically, how old people felt (SAB) and how much they identified with the group of older workers (age GI) accounted for variations in age attributions. Furthermore, these age attributions had negative effects on well-being above and beyond event occurrence. That is, occurrence of negative events had a negative effect on well-being but when attributed to age their negative impact on well-being was even stronger. Interestingly, daily fluctuations of SAB and age GI predicted *different types* of attributions of negative daily work events to age: SAB influenced attributions of negative personal (e.g., fatigue) work events to age, and GI influenced attributions of negative social (e.g., ill-treatment) work events to age. Therefore, the present work provides novel insights regarding the functions of SAB and age GI: rather than being stable constructs, they fluctuate at a daily level. Moreover these fluctuations differentially affect age attributions and subsequently daily well-being.

When trying to assess older adults' identity formation and subsequent possible responses to stigma we considered it important to take into account how permeable older adults perceived this group to be. That is because perceptions of permeability are central in explaining ingroup attitudes (e.g., ingroup identification), and intergroup behaviors (e.g., intentions to engage in collective or individual type of actions; Tajfel, 1975; Tajfel & Turner, 1979). Surprisingly, we discovered that there was little agreement on the concept in the literature and perhaps as a consequence there was not an agreed way of operationalizing it. Indeed, we noted considerable differences in operationalizations of permeability within experimental (lab) studies assessing permeability versus field studies. While in experimental studies permeability was mostly operationalized as the perceived possibility of a change in group membership (Ellemers et al., 1988, 1990; Jackson et al., 1996; Wright et al., 1990), in field studies it was operationalized as the perceived possibility of a change in hierarchical status (Hersby et al., 2009; Levin et al., 1998; Van Laar et al., 2008). *Chapter 4* addresses this issue by undertaking the questions of how permeability can best be defined, how it can be measured for the group of older adults and other social groups, and how it affects GI and coping strategies. First, based on an integration of the existing literature we developed a unifying conceptualization of permeability: We define permeability of group boundaries as *the perceived objective or subjective possibility of changing group membership, and/or of changing hierarchical status*. We here integrate the two operationalizations of permeability that were respectively used in the experimental and field literature: Permeability as the possibility of joining a group by becoming a member of it—we called this *membership permeability*—, and permeability as the possibility of making a hierarchical advancement—which we called *status permeability*. Second, we developed a scale to measure permeability that is applicable to different social groups. The final scale consists of 18 items, which form a two-dimensional scale based on the membership-status distinction. The scale was validated on five different social groups, proved to be invariant across groups and to replicate previous theories and findings regarding the correlates of permeability with similar (convergent validity), differing (discriminant validity) and predicting concepts (criterion-related validity). Finally, we advanced the hypothesis that groups differ in their permeability perceptions depending on whether category membership is biologically determined or innate (such as is the

case with gender or ethnicity), or whether membership is acquired and changeable and therefore less innate (as is the case with obesity and education). We used the developed scale to test this hypothesis and found that as expected, the group of older adults together with the group of women and of ethnic minorities perceived the membership dimension as less permeable than the less "innate" groups of obese and lower educated people. On the contrary, the innate groups of women and of ethnic minorities had higher perceptions of status permeability compared to the older adults and the lower educated. The developed scale thus allowed for the first time to make comparisons between groups based on their permeability perceptions. These results further signify that researchers should take into account the type of permeability as well as the innateness and/or stability of the group, when drawing conclusions based on perceptions of permeability.

With regard to the group of older adults, an application of the scale showed that both forms of permeability, but especially membership permeability, were related to higher ingroup identification and lower identification with the group of younger adults; and were negatively correlated with age so that the older the person the less permeable (s)he perceived the group boundaries to be. This provides empirical evidence for the assumption throughout this dissertation that at younger ages (i.e., adults transitioning from midlife into older age) people perceive the group of older adults to be rather permeable compared to at older ages. Furthermore, higher levels of permeability across groups were associated with greater individual mobility intentions while lower levels of permeability did not favor individual over collective behavioral intentions. This finding can explain why an individual type of response such as SAB was preferred to a collective type of response such as age GI by a rather permeable group such as the adults in the studies of Chapter 2.

Theoretical implications

This dissertation extends the existing knowledge on two components of age identity that are central to older people's construal of self-concept and how they experience their own age and aging: SAB and age GI. It does so by incorporating existing theory and research in the areas of aging, social psychology, and organizational psychology and by using this knowledge to generate and test a number of novel propositions regarding SAB and age GI. Furthermore, it provides a coherent conceptualization and develops a tool to measure a key construct to explain GI and related attitudes and behaviors of group members: the construct of permeability of group boundaries. In the following paragraphs, I further discuss each of these contributions.

SAB and age GI as different components of age identity

One of the main findings in this dissertation is that feeling younger (SAB) and identifying with the group of older adults (age GI) are two different phenomena. Based on the social identity tradition that distinguishes individual and collective identities we reasoned that while feeling younger is related to an individual identity, age GI is related to a collective identity. Indeed, Chapters 2

and 3 provide reasons to believe that SAB and age GI are not interchangeable concepts, at least in the early stages of old age. That is, results of a meta-analysis of three studies in Chapter 2 showed that SAB was mildly correlated with age GI, and that they both had divergent outcomes: whereas age GI was uncorrelated with well-being, SAB consistently correlated with subjective health and self-esteem. Furthermore, results of Chapter 3 showed that on days when people felt younger they attributed negative *personal* but not social events to their age. Conversely, on days when people identified more with the group of older workers they attributed negative *social* but not personal events to their age. This indicates that while feeling younger predicts how people interpret personal events such as being forgetful, identifying with the group of older adults predicts how people interpret social events such as being excluded from meetings.

These findings thus add to the aging literature by showing that feeling younger and identifying with the group of older adults are not synonyms as they are largely understood and operationalized (Barrett, 2003; Diehl & Wahl, 2010; Heckhausen & Krueger, 1993; Kaufman & Elder Jr., 2002; Levy, 2003; Logan et al., 1992; Westerhof & Barrett, 2005; but see Weiss & Lang, 2011). Recognizing that age GI is an alternative age identity to subjective age (bias) offers the opportunity to aging researchers to integrate into their theories the rich literature on GI (e.g., the subsequent advantages of collective identities) offered by the social psychological tradition. Furthermore, it underscores that effects involving SAB should not be attributed to processes of social (dis)identification with one's age group. For example, a study by Barrett (2003) claim that lower socioeconomic status (SES) is linked to age identity. They explain this link by showing that lower SES is related to worse health and a worse health is associated with feeling older as consistently found previously (Barak & Stern, 1986; Baum & Boxley, 1983). Although they claim that SES affects age identity in general, I would argue that the relationship between SES and age GI if existent, needs a different explanation because having worse health does not seem to relate to feeling connected with one's age group. Indeed, to our knowledge it has not yet been researched whether SES affects age GI. Moreover, the claim by several studies that age identity is associated with poorer health when measuring subjective age (Barrett, 2003; Kaufman & Elder Jr., 2002; Logan et al., 1992) contradicts findings that GI is beneficial for health (e.g., Jetten, Haslam, Haslam, Dingle, & Jones, 2014). Our own results suggest that while SAB is linked to subjective health, age GI is not. In sum, results of the present dissertation point to the need to disentangle SAB from age GI in future research.

SAB and age GI as complementary individual and collective strategies

From a social identity perspective the finding that SAB and age GI are not mutually exclusive speaks to the possibility of engaging in simultaneous individual and collective coping strategies in response to group disadvantage. Traditionally, Social Identity Theory has assumed that group members face a choice between individual or collective responses, implying that these strategies would be exclusive and that choices between them are determined by circumstances such as permeability of group boundaries (Tajfel & Turner, 1979). Yet more recent conceptual and empirical approaches suggest that an individual

route, such as making efforts to improve personal competencies that increase individual status, need not exclude a collective route, such as identifying with and supporting members of one's group (Derks et al., 2007a; Stroebe et al., 2015). Results of Chapters 2 and 3 support these empirical approaches by showing that SAB and age GI can be independent from each other for adults who transition into older age. Consequently, this means that members of this particular group can benefit from combining both types of strategies to respond to their individual (e.g., training cognitive abilities) and collective needs (e.g., protesting discrimination against older adults). Older adults can thus work towards feeling younger which has benefits for well-being (Chapters 2 and 3) *and* make use of the enhanced resources (e.g., higher self-esteem) to work towards improving the position of older adults in society. Such a combination of individual and collective resources can feed into a newly evolving approach, which considers the consequences of one's (devalued) social identities on health. This line of work points to the importance of GI in boosting health as members of disadvantaged groups gain support from their group (e.g., Jetten et al., 2012). Our studies point at the added value of taking into account both individual level resources and coping strategies *and* collective resources.

Effects of SAB and age GI on well-being

Another implication of the results of Chapters 2 and 3 pertain to the differential well-being advantages of SAB and age GI. While an increased SAB (i.e., feeling younger than one's biological age) was associated with higher subjective health, self-esteem (Chapter 3), cognitive engagement and decreased negative affect (Chapter 4), age GI was not related to subjective-health, nor to self-esteem (Chapter 2), and was negatively related to cognitive engagement and positively to negative affect (Chapter 4). These findings need to be interpreted in light of the conflicting findings regarding the relation between discrimination and identification in social groups other than age groups (Branscombe et al., 1999; McCoy & Major, 2003). On the one hand, it has been argued that attributing discrimination to one's group membership may be harmful for the well-being of high identifiers (McCoy & Major, 2003). On the other hand, it is argued that identifying with one's group when the group is stigmatized can at least partially alleviate the negative consequences of discrimination: When people feel disadvantaged and discriminated against, increasing identification with one's group constitutes a way of coping with disadvantage by feeling one is connected to others who share these types of experience (Branscombe et al., 1999).

Likewise, permeability may moderate responses to discrimination: the less permeable the group is perceived to be, the more group identification may be considered a favorable strategy to cope with experiences of discrimination. This can explain differences in results between the work of Garstka and colleagues (2004) who studied older adults who were more clearly reaching/had reached old age (64 to 91 years old) and our studies with adults who are transitioning into older age (50 to 75 years old). Whereas Garstka's results provided evidence for the beneficial effects of age group identification, our results did not: GI was not consistently increased when perceiving discrimination and was not associated with higher well-being (Chapter 2). In addition, Chapter 3 provides evidence of a

path by which identifying with the group of older adults has an indirect negative impact on affect and cognitive engagement through age attributions. This indicates that in studying well-being consequences of aging, it is important to take into account at which 'stage' of aging older adults are: are they entering older age (e.g., age 55) or does this transition lie behind them (e.g., age 91).

Overall, we note that the effects of age GI on the well-being of adults who transition into older age remain inconclusive at present. I would argue—and discuss further later in this chapter—that our findings do not necessarily imply that age GI should be avoided and that SAB should always be encouraged in order to promote the well-being of this particular social group. Indeed, it has been found that GI can also have an indirect positive impact on well-being through coping strategies (Crabtree et al., 2010). Crabtree and colleagues' study showed that although GI did not have a direct positive effect on well-being, it triggered collective coping strategies (i.e., stigma-rejection, stereotype-rejection, provision of social support) which in turn increased people's self-esteem. Moreover, it is possible that older adults who identify with their age group have a higher chance of recognizing prejudice, and are more likely to protect themselves against it by deploying opportune coping strategies (see e.g., K. Wang, Stroebe, & Dovidio, 2012). Similarly, although the findings of Chapters 2 and 3 indicate that feeling younger has advantages for well-being in the short-term, this may backfire in the long-term. That is because while feeling younger, older adults may fail to use strategies to compensate for age-related changes and therefore be unable to successfully adjust to aging (Sneed & Whitbourne, 2003). It thus remains open what the long-term effects of SAB and age GI are on older adults who transition from midlife into older age and for older adults at later stages.

SAB and GI as fluctuating constructs

Chapter 3 takes the novel approach to study SAB and age GI as age identity components that fluctuate on a daily level. Results show that there are indeed substantial daily variations in SAB (33% of the overall variance) and age GI (26%), relative to variation between persons (67% for SAB and 73% for age GI). While the importance of short-term fluctuations of SAB is beginning to be recognized and studied in the aging literature (Bellingtier et al., 2015; Kotter-Grühn et al., 2015), to my knowledge there is no research yet on the short-term fluctuations of GI.

Regarding daily SAB findings of Chapter 3 extend previous findings which show an association between SAB and daily stressors although without establishing the nature of their association (Bellingtier et al., 2015; Kotter-Grühn et al., 2015). Results of Chapter 3 provide evidence of a concrete mechanism by which SAB can influence the well-being consequences of daily stressors: by influencing the attributions people make of them as age related. Furthermore, these findings qualify the widely held assumption that SAB basically represents an awareness of people's own aging (Diehl & Wahl, 2010). This definition implies that SAB is a more or less accurate and stable assessment of people's age and aging. In contrast, a fluctuating SAB implies that it is not really accurate and stable but linked to contextual factors. For example, SAB can be an indicator of how people express their daily well-being (Kotter-Grühn et al., 2015). Alternatively, findings of Chapter 2 suggest that SAB can be a reaction to

negative contextual circumstances. As such SAB acts as a self-enhancing strategy that has the potential of repairing people's well-being (see also Teuscher, 2009).

Regarding GI, findings of Chapter 3 extend its current understanding by showing that it too can fluctuate daily. The literature so far has viewed GI as a rather stable aspect of the self-concept. The fact that GI can fluctuate daily has important implications for research on intergroup relations since GI has been found to predict important outcomes such as prejudice against the outgroup, or intentions to fight discrimination. A fluctuating GI implies that its associated outcomes have the potential to fluctuate on a daily basis too. What affects this fluctuation is a question that still remains open. I discuss potential avenues with regard to this point at the end of this chapter.

Formalization of a measurement of permeability of group boundaries

A major additional contribution of this dissertation is that it provides a formal conceptualization and operationalization of permeability that was lacking in the literature. The adopted conceptualization presented in Chapter 4 integrates two approaches to permeability (one by experimental research and one by field research) that were so far disconnected. That is, permeability as the possibility to become a member of the outgroup (e.g., an older adult who is considered young by having facelift surgery; we call this *membership permeability*), and permeability as the possibility to attain the hierarchical status of the outgroup (e.g., an older adult who reaches a senior position in a youth dominated company; we call this *status permeability*). Research on intergroup relations can thus now rely on a more complete theoretical framework on what is considered a key concept to explain intergroup attitudes and behavioral reactions to intergroup inequality. Based on this conceptualization, Chapter 4 further provides an empirically validated measure of permeability. The validation phase shows that both approaches to permeability are valid and that both should be taken into account when studying permeability. However, although the results of both approaches have been used interchangeably, our results provide reasons to believe that this may not always be a sound assumption. That is, we found that their predictive value varies across outcomes: although membership and status permeability were both associated with the constructs in the direction predicted by theory and previous findings, they also differed in the strength of some of these associations. For example, status permeability had a weaker association with ingroup versus outgroup identification than membership permeability. We thus propose that while membership permeability may be related to feelings of attachment to one's group, status permeability may be more related to the desire or need for additional resources of the outgroup.

Another advantage of the scale is the possibility to distinguish different types of social groups: An application of the scale to various low-status groups (i.e., older adults, women, obese, lower educated, ethnic minorities) demonstrated that not all groups are comparable in their permeability perceptions but that they may differ depending on whether they are innate (e.g. gender, ethnicity) or not (e.g., lower educated). While innate groups hold lower perceptions of membership permeability compared to non-innate groups, the latter hold lower

perceptions of status permeability compared to the former. In other words, members of innate groups feel they cannot actually enter a high status group (e.g., a woman feeling that she can become a male), but they are more likely than non-innate groups to feel that they can gain higher status (e.g., a woman moving up within a male dominated company). What are the implications thereof? To give an example, these perceptions of permeability may differentially affect the types of strategies used to upgrade the status position of the individual or of the group as a whole. For example, an older adult who considers it impossible to be seen as a younger adult (membership permeability) may try to acquire the valued characteristics to obtain a job in a youth dominated organization (status permeability). Knowledge of permeability perceptions can thus help predict predominant responses to inequality. In sum, our permeability scale not only constitutes the first validated measure within the field, it also serves to predict identification, attitudes, and behavior when social groups face inequality.

Practical implications

This research project addressed the question of how cues of aging and agism affect identity formation, self-esteem, perceived health, negative affect and cognitive engagement for adults transitioning from midlife into older age. Practical implications of our findings thus refer to the potential of the studied mechanisms to promote well-being, attitudes and behaviors.

As mentioned, results of Chapter 2 and 3 indicate that feeling younger could be beneficial for older adults' well-being, at least in the short-term. Previous research has shown that inducing a younger subjective age is surprisingly easy through downward social comparison with same age peers (Stephan et al., 2013), as it is equally easy to induce older subjective ages by situating older adults in memory-testing contexts (Hughes et al., 2013). Interventions could benefit from this knowledge to induce a temporary decrease of subjective age, which seems to gear people up with resources that enhance their self-image. For example, short-term practices to counterbalance the negative effects of age discrimination could include focusing on personal characteristics where people feel they are better off than a prototypical older adult, to stimulate a younger SAB. However, more research is needed to clarify the applicability of such an intervention, as we do not fully understand under what circumstances it may work. For example, we do not know whether it holds for adults older than those in our samples (50 to 75 years old) or cross-culturally, nor do we know its longer-term consequences.

Although our findings did not support a direct positive effect of age GI on well-being but an indirect negative consequence through age attributions, we cannot conclude that disidentifying with the group of older adults is per se maladaptive. In fact, there is abundant evidence on the positive effects of GI on well-being (Jetten et al., 2012). Indeed, GI has been found to promote attitudes and behaviors that counteract the negative effects of stigma such as giving and receiving social support (S. A. Haslam et al., 2005), challenging and opposing negative stereotypes of the group (Reynolds et al., 2000), fighting discrimination through collective actions (Van Zomeren et al., 2008), and engaging in health and well-being protective behaviors (Jetten et al., 2014). Our seemingly contradictory

findings are likely the result of a strong association between becoming old and physical, mental, and social status losses. Indeed, additional evidence shows that older adults respond to negative stereotypes by disidentifying with their age group (Weiss & Lang, 2011). However, the well-being effects of disidentifying with the age group are not yet clear. Based on the above-mentioned evidence, the effects of disidentifying with one's age group are likely to be negative in the long-term. It is therefore reasonable to conclude that well-being advantages for older adults can be obtained from practices and policies that promote social change and a more positive image of older age and aging. I suggest that a widespread positive view of aging and older adults would facilitate not only the acceptance of aging but also the feelings of connectedness with the group of older adults. This in turn should foster both the individual advantages of embracing one's own process of aging, and the well-being advantages that age GI has to offer (e.g., a sense of place, purpose and belonging; S. A. Haslam et al., 2009). Our findings do suggest that feeling younger and identifying with one's age group are simultaneously possible for adults transitioning from midlife into older age. This implies that the benefits of feeling younger can be paired with the potential well-being advantages of GI for this particular age group.

Findings of Chapter 3 further showed that attributing negative experiences to age negatively impact older workers' affect and cognitive engagement. Age is an aspect of the self which is internal and uncontrollable and age attributions have been found to have strong negative consequences for well-being: Attributing illness to age prevents people from engaging in health promoting behaviors such as seeking medical treatment or exercising. Moreover, age attributions and negative views of aging predict poorer health, shorter longevity, and feelings of emptiness, worthlessness and hopelessness (Levy, Slade, & Kasl, 2002; Levy, Slade, Kunkel, et al., 2002; Stewart et al., 2012b). Breaking the association between "old" and "bad" thus has the potential to disrupt the negative consequences that age attributions have for the well-being of older adults. Organizations and society as a whole could contribute to improve older adult's well-being and job performance by emphasizing the positive side of aging while being critical about the overemphasized negative views of aging. After all, research has shown that older adults enjoy high levels of affective well-being and emotional stability (Scheibe & Carstensen, 2010), that age per se is not the predominant cause of illness in older adults (Stewart et al., 2012b), and that most negative stereotypes of older workers are unwarranted (Ng & Feldman, 2012). Conversely, several positive stereotypes of older adults and older workers in particular have been validated, such as that they are more dependable, honest, loyal, have lower rates of absenteeism, and are less likely to quit (Posthuma & Campion, 2009).

Based on this evidence, I advocate the implementation of strategies that aim at reducing the negative views towards older adults and aging. Various strategies can be drawn from the literature on negative stereotyping and discrimination, such as creating spaces for a more frequent positive contact between older adults and younger adults or educating both groups on the misconceptions and truths of old age and getting older (Chiu, Chan, Snape, & Redman, 2001; Hale, 1998; Ng & Feldman, 2012; Posthuma & Campion, 2009). In conclusion, we should work on reducing the negative beliefs, attitudes and

behaviors towards older adults and aging, which I believe will benefit not only older adults themselves but also organizations and society at large.

Limitations and Future Directions

This section covers not so much the methodological limitations of the studies as they have been already discussed in the corresponding chapter, but the questions that the general findings of this dissertation raise and that can be further assessed in future research. Firstly, we made the point that SAB and age GI are simultaneously possible based on the results of Chapters 2 and 3. It should be noted though that our studies show these effects for a group that is entering 'old age' and is therefore more permeable and flexible in their assessments of whether or not they belong to the group of older adults. Previous research with an older sample (65 to 88 years old) has found that age GI was negatively associated with SAB in the presence of negative stereotyping (Weiss & Lang, 2011). Longitudinal studies would be useful to determine at what advanced age these two routes stop being simultaneously possible, and in general, how the relationship between age GI and SAB develops as a function of age and in relation to well-being. In this regard, it would be also important to explore the moderating role of permeability in the various age groups that are classified as 'older adults'. This would help determine whether the extent to which group boundaries are perceived as set versus more flexible affect the well-being outcomes of age GI. Furthermore, the effects of permeability on SAB have not yet been empirically studied. Insofar as SAB is—as we propose—an individual type of response to cope with stigma, we can expect that when the boundaries of the age group are perceived as permeable people will respond by feeling younger. Indirect support in this direction is our finding that discrimination increased SAB in a rather permeable group: the average gap varied between 10 and 14 years for participants in the discrimination condition (Chapter 2). In sum, there is still an empirical gap when it comes to assessing the moderating roles of age and permeability on the relationship between SAB and age GI as responses to stigma, and on their well-being consequences.

Secondly, findings of Chapters 2 and 3 suggest that SAB can be beneficial for well-being while age GI may be neutral or negative for well-being. With regard to this finding some considerations should be made. On the one hand, Chapter 2 made use of three studies whose results were not conclusive about the buffering effects of SAB. Although this could be explained by the rather different nature of the sample in Study 3 (as discussed in the chapter), research indicates that mixed results are highly likely to be encountered when multiple studies are performed (Lakens & Etz, 2017). To clarify this issue, we included an internal meta-analysis. Results of the meta-analysis showed that SAB was the immediate response to an instance of discrimination and that it was consistently associated with higher levels of subjective health and of self-esteem. However, less clear was the mediational role of SAB on the relationship between discrimination and well-being since this hypothesis was not confirmed by the meta-analysis. Based on these mixed results I acknowledge that SAB as a coping strategy is a relatively new proposition that requires further examination. On the other hand, we do not know if the effects we found for SAB and age GI hold in the long term. As

previously argued, GI has the potential to have positive long-term consequences for well-being (e.g., Jetten et al., 2014), and SAB has been associated with long-term health benefits (Uotinen et al., 2005). However, little research has been done on the indirect effects of SAB and age GI on well-being. As previously argued, we do not know what their effects are on a timely adaption to old adulthood, which could allow older adults to cope with inequality or work on age-related changes. In conclusion, it remains open whether SAB and age GI, and the associated well-being consequences as response to instances of age discrimination, can be expected for more chronic forms of discrimination. An interesting area for future research would be thus to investigate the long-term effects of SAB and age GI on various age groups classified as older adults.

Thirdly, in Chapter 3 we found that SAB and age GI fluctuate daily in natural settings. However, the chapter does not resolve the question of what causes these daily variations. Research on SAB has proposed as causes of daily variability factors such as daily stressors, health, and affect (Bellingtier et al., 2015; Kotter-Grühn et al., 2015). However, a causal link has not yet been established. One additional possible predictor of daily SAB variability could be the focus on social comparisons. Indeed, previous research has shown that receiving feedback that one performed better compared to same age-peers induces a younger subjective age (Stephan et al., 2013). That is because perceptions of aging as threatening trigger people to focus on aspects where they feel better off than the prototypical older adult as a strategy of self-enhancement (Cheng, Fung, & Chan, 2007). These downward social comparisons in turn, would result in a more youthful subjective age (Barrett, 2003). It seems likely that social comparisons fluctuate often depending on the domain that becomes salient and whether the person feels better or worse off compared with same-aged peers at that particular domain. Therefore, fluctuations in social comparisons could be a factor that causes fluctuations in SAB. However, more research (e.g., one that uses an event sampling design) is needed to test this proposition.

Regarding GI, research has so far understood this concept as rather stable. As such, it has focused on stable determinants of GI such as the perceived permeability of group boundaries, and the stability and legitimacy of the group's status position (Ellemers et al., 1990, 1993). However, to have a more comprehensive understanding of GI future research should also investigate dynamic determinants of GI. One possibility is that daily fluctuations in age GI are caused by salience of the social category. For example, if I witness a conversation where an older adult is mentoring a younger person, this may make salient age as a relevant social category and this in turn may affect my age identification levels. Indeed, Turner (1999) points to the importance of the social context in making the social category salient and in modifying identification levels. Future studies can for example investigate whether specific daily experiences such as situations when one feels proud of the ingroup or one has a conflict with the outgroup could modify daily GI. Furthermore, future research can investigate whether permeability, stability and legitimacy perceptions could also fluctuate daily. Indeed, these could fluctuate when the social context changes. For example, older adults can be seen as low in status in some contexts (e.g., when discussing technological advances) and high in status in others (e.g., when presiding a senior managers' meeting). As older adults may experience

variations in the status of their group membership, a plausible assumption is that these variations influence the perceptions of status permeability. In this sense, the salience of the context could influence the outcomes associated with permeability such as GI, ingroup bias and endorsement of strategies, which will be an interesting avenue to explore. Ultimately, understanding daily determinants of SAB and age GI may provide us with a tool to promote short-term well-being and to better understand certain attitudes and behaviors that can promote long-term well-being of older adults.

Finally, another interesting path for future research pertains to the possibilities that Chapter 4 creates with a formal conceptualization and operationalization of permeability. Although the chapter focuses on groups with low social status we believe the scale is applicable to high status groups. The developed scale thus opens up the possibility to further explore how permeability perceptions affect attitudes and behaviors of high status group members, which has so far received little attention in the literature. For example, future research could explore whether each form of permeability (i.e., membership and status permeability) is associated with different outcomes for high status groups. Given that membership permeability seems to be associated with the protection of one's group identity more than is status permeability, one may wonder whether perceived membership permeability would lead to higher outgroup derogation by high status group members than status permeability. Another area to explore is the application of the scale to other types of social groups that were not covered in the chapter but that can differ in their perceptions of status and membership permeability in interesting ways, such as those based in ideology or nationality. For these groups where status differences may play less of a role, and membership may pertain more to intrinsic values than to external characteristics, one could investigate levels of both types of permeability and how they influence attitudes and behaviors. For example, changing ideology may seem more impermeable than changing gender (e.g., women who passed up as men to serve in the army), or changing nationality may be seen as possible but it may have less of an effect on ingroup-outgroup favoritism. In sum, a formal measure of permeability opens up a field of possibilities for future research, to corroborate previous theorizing and to advance the study of intergroup relationships.

Concluding remarks

This dissertation aimed at providing insight into how age identity components are shaped and could in turn shape the well-being of adults transitioning from midlife into older adulthood. Specifically, it focused on two identity components that have inspired profound interest among different literatures due to their important repercussions: SAB, largely studied in the aging literature, and GI largely studied in the social psychological literature. Importantly, we found that perceived cues of aging and agism can influence and be influenced by SAB and age GI, and that this can in turn have direct and indirect consequences for well-being outcomes such as self-esteem, health, affect and cognitive engagement of older adults. This dissertation reconceptualizes the traditional view of SAB

and age GI by showing that they are not synonyms, as traditionally proposed, but that they differ in nature: SAB relates to an individual identity while age GI relates to a collective identity; as such they differ in their antecedents and consequences. Furthermore, it shows that SAB and age GI are not stable constructs, as largely viewed, but can fluctuate daily. This dissertation further contributed to the development of an important construct to explain identification formation and intergroup behavior, which is the perception of permeability of group boundaries. In sum, the present dissertation contributes to the aging, social psychological and organizational literatures by exploring SAB and age GI in a dynamic fashion: it explores their individual and collective properties, it studies their between- and within-person relationships, and it investigates the effects of permeability perceptions on GI and on behavioral intentions of older adults and in comparison with other social groups.

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Supplementary Material

Supplementary Material Chapter 4

Experts ratings of the acceptability of each item as descriptive of the given definition and as applicable in the context of specific social groups.

		Definition			Women			Older adults			Ethnic minorities			Lower educated			Obese people		
			% acceptance			% acceptance			% acceptance			% acceptance			% acceptance			% acceptance	
Category	Item	N	No	Yes	N	No	Yes	N	No	Yes	N	No	Yes	N	No	Yes	N	No	Yes
Membership. Objective constraints	1. (Ingroup) and (outgroup) are fundamentally different (-)	28	46%	54%	11	9%	91%	11	9%	91%	9	22%	78%	11	27%	73%	8	25%	75%
	2. (Ingroup) and (outgroup) are worlds apart (-)	28	50%	50%	11	27%	73%	11	9%	91%	9	22%	78%	11	27%	73%	8	25%	75%
	3. The difference between an (ingroup member) and an (outgroup member) is clear-cut (-)	27	52%	48%	11	27%	73%	11	0%	100%	9	22%	78%	11	27%	73%	8	25%	75%
Membership. Personal constraints	4. I can physically appear as an (outgroup member) if I want	28	11%	89%	11	18%	82%	11	0%	100%	9	0%	100%	11	27%	73%	8	25%	75%
	5. No matter what effort I make, I will never be seen as an (outgroup member) (-)	27	4%	96%	11	18%	82%	11	0%	100%	9	0%	100%	11	18%	82%	8	13%	88%

	6. I could be regarded as an (outgroup member) if I wanted to	27	7%	93%	11	18%	82%	11	0%	100%	9	0%	100%	11	9%	91%	7	0%	100%
	7. There is nothing that I can do that can make me be considered as an (outgroup member) (-)	27	4%	96%	11	18%	82%	11	9%	91%	9	0%	100%	11	9%	91%	8	13%	88%
Membership. Subjective constraints	8. Passing myself off as an (outgroup member) goes against my values (-)	27	89%	11%	11	45%	55%	11	55%	45%	9	78%	22%	11	64%	36%	7	29%	71%
	9. Wanting to appear as an (outgroup member) goes against who I am (-)	27	81%	19%	11	45%	55%	11	55%	45%	9	78%	22%	11	55%	45%	7	29%	71%
	10. Wanting to be treated as an (outgroup member) goes against my beliefs (-)	27	85%	15%	11	55%	45%	11	55%	45%	9	78%	22%	11	64%	36%	7	29%	71%
Status. Objective constraints	11. It is physically possible for some (ingroup members) to do all the activities that (outgroup members) can do	24	33%	67%	11	27%	73%	9	33%	67%	8	13%	88%	11	27%	73%	7	14%	86%

	12. Some (ingroup members) have at least the same physical capacities that (outgroup members) have	23	35%	65%	11	27%	73%	9	0%	100%	8	50%	50%	11	27%	73%	7	14%	86%	
	13. It is physically possible for some (ingroup members) to access the same positions in society as (outgroup members)	23	26%	74%	11	18%	82%	9	22%	78%	8	13%	88%	11	18%	82%	7	0%	100%	
Status. Personal constraints	14. No matter what effort I make, I cannot access the same resources that an (outgroup member) can access (-)	24	4%	96%	5	0%	100%	10	10%	90%	5	0%	100%	11	0%	100%	8	0%	100%	
	15. The truth is, I can do very little to access resources that (outgroup members) typically have access to (-)	24	0%	100%	11	0%	100%	10	0%	100%	8	0%	100%	11	0%	100%	8	0%	100%	

Status. Subjective constraints	16. Occupying positions in society that are typical of (outgroup members) goes against my values (-)	23	78%	22%	11	64%	36%	9	56%	44%	8	75%	25%	10	60%	40%	6	83%	17%
	17. Accessing resources that are typical of (outgroup members) is against who I am (-)	23	74%	26%	11	55%	45%	9	56%	44%	8	75%	25%	10	50%	50%	6	67%	33%
	18. Doing activities that are typical of (outgroup members) goes against my principles (-)	23	78%	22%	11	64%	36%	9	44%	56%	8	75%	25%	10	50%	50%	6	50%	50%

Note. N= number of respondents

Nederlandse Samenvatting

(Dutch Summary)

De vergrijzing vormt een uitdaging voor velerlei organisaties alsook de maatschappij als geheel. Op individueel niveau komt ouder worden echter met zijn eigen uitdagingen. Ouderen krijgen bijvoorbeeld te maken met een verschuiving in hun identiteit die confronterend kan zijn: van het behoren bij een groep met hoge status naar een groep met lage status waar negatieve stereotyperingen aan verbonden zijn zoals vergeetachtigheid, inflexibiliteit en zwakheid (Chasteen et al., 2002). Met deze zeer relevante en actuele problematiek in gedachten, ligt de focus van dit proefschrift op volwassenen in de transitie naar ouderdom, de identiteitsverandering die daarmee gepaard gaat en de negatieve vooroordelen waar ouderen mee te maken krijgen.

Ouder worden kan samengaan met het gevoel status te verliezen—met name in Westerse landen—en jongeren maar ook ouderen zelf associëren ouder worden met lichamelijke en geestelijke aftakeling. Signalen of cues die refereren aan ouderdom kunnen daarom het welzijn van ouderen negatief beïnvloeden. Bovendien komen negatieve stereotyperingen, vooroordelen en discriminatie tegen ouderen voor op de werkvloer, in de medische industrie, en in de media, met alle gevolgen van dien voor de sociaaleconomische kansen van ouderen, hun zelfvertrouwen en hun fysiek en mentaal functioneren (North & Fiske, 2012). In de context van de complexe identiteitsverandering die plaatsvindt in de transitie naar ouderdom, was de hoofdvraag van dit proefschrift: *Wat zijn de consequenties van cues van ouderdom en de negatieve vooroordelen over ouder worden op de identiteit van ouderen en hun psychisch welbevinden?* In dit proefschrift heb ik mij met name gericht op twee componenten die een rol spelen in de identiteitsformatie van ouderen: de subjectieve bias met betrekking tot de eigen leeftijd bias (SLB) en identificatie met de categorie ouderen (leeftijd GI). SAB verwijst naar het verschil tussen gevoelsleeftijd en de werkelijke leeftijd van een persoon. Leeftijd GI verwijst naar gevoelens van verbondenheid met andere ouderen volwassenen. Verder heb ik mij gericht op de volgende vier uitkomstmaten die relevant zijn voor psychisch welbevinden: zelfvertrouwen, subjectieve gezondheid, negatief affect en cognitief vermogen. Dit proefschrift draagt bij aan de sociaal psychologische literatuur door bovenstaande constructen en de manier waarop deze zich tot elkaar verhouden op een

dynamische manier te bestuderen. Ten eerste gaat dit proefschrift in op twee typen identiteitsformatie: een op individueel niveau via SLB en een op collectief niveau via leeftijd GI. Ten tweede wordt de identiteitsverandering gedurende het ouder worden niet alleen als stabiele factor gemeten (door niveaus van SLB en leeftijd GI met elkaar te vergelijken), maar ook op een dynamische manier (door dagelijkse veranderingen in SLB en leeftijd GI te meten). Bovendien wordt gekeken naar het verband tussen deze stabiele en dynamische identiteitsveranderingen in relatie tot cues van ouderdom en psychisch welbevinden. Tenslotte wordt een belangrijk concept uitgewerkt dat betrekking heeft op identiteitsvorming en groepsgedrag in groepen met een lage status, zoals dat het geval is bij ouderen; namelijk hoe permeabel men de grenzen van zijn of haar eigen groep beschouwt. Vervolgens wordt onderzocht of percepties van permeabiliteit van oudere mensen verschillen van andere lage status groepen. Ook wordt over groepen heen bekeken welke gevolgen deze percepties van permeabiliteit hebben voor de eigen identiteit als groepslid en voor het gedrag dat men als groepslid vertoont of wil vertonen.

Samenvatting van de hoofdresultaten

Welke impact heeft discriminatie op basis van leeftijd op de identiteit van ouderen? En wat zijn de gevolgen hiervan op het welzijn van ouderen? In het licht van de literatuur over het bufferende effect van collectieve en individuele strategieën voor zelfvertrouwen en een groeiende interesse in hoe deze strategieën zich tot gezondheidsuitkomsten verhouden (S. A. Haslam et al., 2009), werd in Hoofdstuk 2 onderzocht of deze bufferende werking plaatsvindt wanneer volwassenen in de transitie naar ouderdom geconfronteerd worden met leeftijdsdiscriminatie. Conform de sociaal psychologische literatuur en de literatuur rondom ouderdom werd uitgegaan van twee parallel aan elkaar lopende paden waarbij ouderen hun psychisch welbevinden op twee mogelijke manieren kunnen bufferen wanneer zij met vermeende leeftijdsdiscriminatie in aanraking komen: een individueel pad waarbij discriminatie gecompenseerd wordt door zich jonger te voelen dan de daadwerkelijke eigen leeftijd (SLB), en een collectief pad waarbij personen zich tot hun groep richten en de identificatie met andere ouderen juist verhogen (leeftijd GI). De resultaten bevestigen met name het individuele pad: Een meta-analyse met een overzicht van drie experimentele studies liet zien dat ouderen die werden geconfronteerd met leeftijdsdiscriminatie aangaven zich jonger te voelen dan degenen die niet aan leeftijdsdiscriminatie waren blootgesteld. Bovendien bleek in alle onderzoeken een verhoogde SLB verband te houden met hogere subjectieve gezondheid en in twee van de drie onderzoeken met verhoogd zelfvertrouwen. Het buffereffect van SLB bleek echter alleen uit studies 1 en 2, waarbij werd aangetoond dat SLB een mediator is voor de relatie tussen discriminatie en subjectieve gezondheid. Echter, ouderen die werden blootgesteld aan discriminatie op basis van hun leeftijd, identificeerden zich niet meer met andere ouderen (het collectieve pad). Ook was er geen verband tussen leeftijd GI en gezondheidsuitkomsten. Bovendien toonden de resultaten van Hoofdstuk 2 aan dat de twee paden zich onafhankelijk van elkaar voltrekken. SLB en leeftijd GI bleken in alle

onderzoeken geen verband met elkaar te houden en terwijl leeftijd GI over de studies heen niet geassocieerd met welzijn, was SLB juist over studies heen consistent gerelateerd aan subjectieve gezondheid en zelfvertrouwen.

Hoofdstuk 3 richtte zich op de vraag: Wat is de rol van de verschillende identiteitscomponenten op leeftijdsgerelateerde negatieve persoonlijke en sociale ervaringen, en wat is het effect daarvan op psychisch welbevinden? De transitie naar ouderdom wordt vaak geassocieerd met cognitieve en lichamelijke gebreken en met het verlies van status. Dit geldt met name voor oudere arbeiders in de Westerse wereld waar ouderdom in verband wordt gebracht met verminderde competentie (Cuddy & Fiske, 2002; Posthuma & Campion, 2009).

In de sociaal psychologische literatuur en de literatuur rondom ouderdom worden SLB en leeftijd GI als stabiele constructen gezien. Omdat de identiteit van volwassenen in de transitie naar ouderdom echter nog niet vaststaat, onderzochten we in Hoofdstuk 3 of SLB en leeftijd GI flexibele en zich veranderende constructen zijn – afhankelijk van tijdstip/dag of de persoon in kwestie. We onderzochten de hypothese dat ouderen, vanwege deze flexibiliteit, op sommige dagen negatieve persoonlijke en sociale gebeurtenissen wijten aan het ouder worden, terwijl ze deze op andere dagen eerder attribueren aan toevallige en tijdelijke omstandigheden. Bijvoorbeeld: op dagen waarop mensen zich ouder voelen, wijten zij een gevoel van vermoeidheid mogelijk eerder aan de eigen leeftijd dan op dagen dat zij zich jong voelen en ze hun vermoeidheid in verband brengen met een slechte nacht slaap. Net zo is het mogelijk dat op dagen waarbij mensen zich sterk identificeren met oudere werknemers, ze een vervelende opmerking van een collega als leeftijdsdiscriminatie interpreteren, terwijl op dagen waarbij ze zich minder met oudere werknemers identificeren, ze bij diezelfde opmerking gewoon denken dat hun collega een slechte dag heeft.

De resultaten uit hoofdstuk 3 toonden aan dat de elementen rondom leeftijdsidentiteit inderdaad verschillen van dag tot dag en dat die fluctuaties consequenties hebben voor wat aan leeftijd geattribueerd wordt. Met andere woorden, hoe oud men zich voelt, en de mate waarin men zich identificeert met oudere arbeiders, zorgde voor variatie in dagelijkse attributie naar leeftijd. Bovendien bleken deze leeftijdsattributies een negatief effect te hebben op psychisch welzijn, zelfs meer dan negatieve context specifieke gebeurtenissen alleen. Negatieve gebeurtenissen hadden namelijk een negatief effect op psychisch welzijn, maar dit effect was nog sterker wanneer de gebeurtenis aan leeftijd werd geattribueerd. Een verrassend resultaat was dat deze fluctuaties in SLB en leeftijd GI voorspellend waren voor *verschillende soorten* attributies van dagelijkse negatieve werkervaringen op leeftijd: SLB had invloed op attributies van negatieve persoonlijke (bijvoorbeeld vermoeidheid) werkervaringen op leeftijd, terwijl GI invloed had op attributies van negatieve sociale (bijvoorbeeld negatieve behandeling door anderen) werkervaringen op leeftijd. Deze bevindingen geven nieuwe inzichten in de processen rondom SLB en leeftijd GI: in plaats van stabiele constructen, blijkt er sprake te zijn van dagelijkse niveau verschillen. Bovendien hebben deze verschillen een differentiële uitwerking op leeftijdsattributies en op het psychisch welzijn.

Het leek ons belangrijk rekening te houden met hoe permeabel ouderen de grenzen van hun groep beschouwen in ons onderzoek naar de identiteitsvorming van ouderen en het omgaan met stigma. De houding jegens de eigen groep wordt

voor een belangrijk deel bepaald door waarnemingen over hoe permeabel de grenzen van de eigen groep zijn (bijvoorbeeld: voornemens voor collectieve en individuele handelswijzen; Tajfel, 1975; Tajfel & Turner, 1979). De literatuur bleek echter geen consistente definitie van het begrip te hanteren, waardoor ook over de operationalisatie van het begrip geen consensus was. Met name tussen labexperimenten en onderzoek in het veld bleken grote verschillen te bestaan in de operationalisatie van permeabiliteit. In experimenteel onderzoek werd permeabiliteit overwegend geoperationaliseerd als de inschatting over de mogelijkheid van verandering in groepslidmaatsschap (Ellemers et al., 1988, 1990; Jackson et al., 1996; Wright et al., 1990). In veldonderzoek betrof de operationalisering de inschatting over de mogelijkheid van verandering in rang (Hersby et al., 2009; Levin et al., 1998; Van Laar et al., 2008).

De onderzoeksvragen van *Hoofdstuk 4* richtten zich daarom op het creëren van een passende definitie van permeabiliteit, het meten van permeabiliteit bij ouderen en andere maatschappelijke groeperingen en het effect van permeabiliteit op GI en copingstrategieën. Ten eerste werd op basis van de bestaande literatuur een eenduidige definitie van permeabiliteit van groepsgrenzen ontwikkeld: *de ingeschatte objectieve of subjectieve mogelijkheid om van groep te wisselen, en/of van hierarchische status te veranderen.* Deze definitie integreert de twee operationalisaties van permeabiliteit uit respectievelijk experimenteel- en veldonderzoek: Permeabiliteit als de mogelijkheid bij een groep te horen door er lid van te worden—genaamd *lidmaatschap permeabiliteit*—en permeabiliteit door het veranderen van status binnen de groepshiërarchie—genaamd *status permeabiliteit*. Ten tweede werd een schaal ontwikkeld om permeabiliteit van verschillende lage status groepen te meten. De schaal bleek zoals verwacht te bestaan uit twee dimensies die het onderscheid tussen lidmaatschap en status permeabiliteit bevestigden. Ook voldeed de schalen aan verschillende validiteitscriteria (convergente discriminante en criterium). Als laatste onderzochten we de hypothese dat groepen verschillen in hun ingeschatte permeabiliteit, afhankelijk van het feit of groepslidmaatschap aangeboren of biologisch bepaald is (zoals bij geslacht of etniciteit), of verworven en veranderlijk in plaats van vaststaand (zoals bij obesitas en scholing). De door ons ontwikkelde schaal werd gebruikt om deze hypothese te toetsen. Zoals verwacht bleek de groep ouderen, de groep vrouwen en de groep met mensen uit etnische minderheden de permeabiliteit van hun groepslidmaatschap als ondoordringbaarder te beschouwen dan de minder "vaststaande" groep lager opgeleiden en mensen met obesitas. Daarentegen bleken de groep vrouwen en mensen uit etnische minderheden meer het gevoel te hebben dat op het gebied van status hun groep permeabel is dan de groep ouderen en lager opgeleiden. Daarmee maakt deze nieuw ontwikkelde schaal het voor het eerst mogelijk de ingeschatte permeabiliteit tussen groepen te vergelijken.

Toepassing van de schaal bij ouderen toonde aan dat beide vormen van permeabiliteit, maar met name lidmaatschap permeabiliteit, verband hielden met hogere identificatie met de eigen groep en lagere identificatie met de groep van jongere volwassenen. Ook correleerden beide vormen van permeabiliteit negatief met leeftijd: hoe ouder de persoon, des te lager de permeabiliteit werd ingeschat.

Dit resultaat ondersteunt op empirische wijze het idee dat jongere mensen (bijvoorbeeld volwassenen op de grens tussen middelbare leeftijd en ouderdom) de groepsgrenzen van ouderen als meer permeabel beschouwen dan ouderen dat doen.

Conclusie

Dit proefschrift had als doel licht te werpen op de verschillende componenten rondom leeftijd en identiteitsformatie en het effect daarvan op het psychisch welzijn van volwassenen in de transitie naar ouderdom. De focus lag met name op de twee identiteitscomponenten die vanwege hun grote impact vanuit verschillende literaturen bestudeerd werden: Onderzoek naar SLB komt met name voor in de literatuur rondom ouderdom, terwijl GI met name voorkomt in de sociaal psychologische literatuur. Uit ons onderzoek bleek dat cues over ouderdom en de negatieve vooroordelen jegens ouderen invloed kunnen hebben op en beïnvloed kunnen worden door SLB en leeftijd GI. Uitkomsten rond psychisch welzijn, zoals zelfvertrouwen, gezondheid, stemming en mentale focus worden hier op hun beurt weer direct en indirect door beïnvloed. Dit proefschrift biedt een vernieuwende kijk op SLB en leeftijd GI door aan te tonen dat deze termen niet synoniem aan elkaar zijn, zoals werd aangenomen, maar cruciale verschillen hebben: SLB heeft betrekking op de individuele identiteit, terwijl leeftijd GI betrekking heeft op een collectieve identiteit, met alle verschil in antecedenten en consequenties van dien. Bovendien bleken SLB en leeftijd GI van dag tot dag te veranderen, terwijl in eerdere literatuur van stabiele constructen werd uitgegaan. Ook droeg dit proefschrift bij aan het ontwikkelen van een belangrijk construct om identiteitsvorming en gedrag tussen groepen te verklaren: de inschatting van de permeabiliteit van groepen. Als geheel draagt dit proefschrift bij aan de literatuur binnen de ouderdom, arbeids-, organisatie- en sociale psychologie door SLB en leeftijd GI op een dynamische manier te onderzoeken: er werd gekeken naar de individuele en collectieve componenten, de relaties binnen en tussen groepen, en de effecten van permeabiliteit op GI en op gedragsintenties van ouderen binnen de eigen groep en in vergelijking met andere maatschappelijke groeperingen.

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About the Author

Bibiana M. Armenta Gutiérrez was born on February 22nd 1980 in Bogotá, Colombia. Her great curiosity about the world and the people in it, and her passion for learning resulted in her following several career paths. She first studied a five-year bachelor's program in Industrial Engineering in her home city, with specialization in Management and a degree in Literature. After four years of professional experience as manager and consultant she then moved to The Netherlands to follow a master's in Management, Economics and Consumer studies at Wageningen University, followed by one year of research experience in the Agricultural Economics Research Institute (LEI) in The Hague. Next, she followed a research master in Social Psychology at the Free University of Amsterdam where she graduated *cum laude* in 2012. In the same year she started her PhD with Dr. Katherine Stroebe, Prof. Susanne Scheibe, Prof. Nico W. van Yperen and Prof. Tom Postmes at the University of Groningen. Her PhD studies focused on an increasingly relevant subject for society, organizations and older individuals: the age identity change and accompanying well-being consequences of people who transition into old age, which resulted in the present dissertation. During her PhD studies, the challenges of analytical thinking, continuous learning, writing, teaching, and generating of ideas, made her feel at home. She now continues doing research and teaching in the Social Psychology section at the Free University of Amsterdam.

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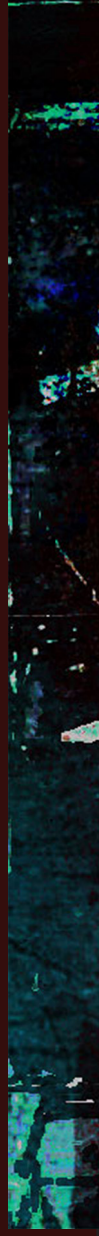

Getting older, and the identity transition that comes with it, can be a challenging experience but can also bring new opportunities. Amidst the ongoing global phenomenon of population aging, this dissertation examines processes that affect the well-being of adults who are stepping into old age. In particular, four studies examine how a new identity as an older adult is shaped and in turn shapes the well-being of adults between 50 to 70 years of age. The studies focus on two components of age identity: (1) How old adults subjectively feel, and (2) how identified or connected they feel with their age group. In general, results show that when facing a negative age-related experience, feeling younger may be beneficial while identifying with one's age group may be detrimental for older adults' well-being, at least in the short term.

The role that a new older-age identity plays can vary substantially between people. To better understand this variability, the present dissertation also advances an important predictor of identity formation: the perceived permeability of one's group boundaries—i.e. to what extent people see a possibility to leave the group and join a different group. A tool to measure permeability of the group of older adults, as well as other social groups, is developed. The new measurement tool can be used to predict not only how much people identify with a particular social group, but also how much people are willing to engage in behaviors aimed at escaping from, or protecting that identity.

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